US Army Corps
of Engineers
Baltimore District

PLANNING DIVISION

PUBLIC NOTICE

Date: December 30, 2003

Environmental Assessment
Wyoming Valley Levee Raising Project, Pennsylvania

ALL INTERESTED PARTIES:

The Baltimore District of the U.S. Army Corps of Engineers has prepared an environmental assessment (EA) to address modifications to the Abrahams Creek diversion structure and various penetrations through the Wyoming Valley levee. Work proposed is a result of refined and detailed designs to ensure the integrity of the structural flood protection project. Work would include slip-lining pipes, adjusting gates, constructing an apron, replacing seals, cleaning and painting, grouting tunnels/pipes, and repairing collapsed pipes. No appreciable or significant adverse effects either individually or cumulatively, are expected. An alternatives evaluation and impacts analysis have been prepared and are documented in the EA.

An Environmental Impact Statement (EIS) and Record of Decision (ROD) were originally prepared in 1981. A Supplemental EIS and ROD were prepared in 1996, followed by a Supplemental EA and Finding of No Significant Impact (FONSI) in 1998. On-going design and construction modifications, and implementation of the mitigation plan necessitated preparation of this EA.

Individuals wishing to obtain a copy of, or wanting more information about this EA or the anticipated FONSI, may write to the U. S. Army Corps of Engineers, Baltimore District, Attn: CENAB-PL (Bill Abadie), P. O. Box 1715; Baltimore, Maryland 21203-1715. Mr. Abadie may be reached by phone at (410) 962-6141 or 1-800-295-1610, or via electronic mail at william.d.abadie@usace.army.mil. The EA may also be viewed on the District's web site at http://www.nab.usace.army.mil/publications/non-reg_pub.htm.

A modification to the original Water Quality Certification (WQC) is required, in accordance with Section 401 of the Clean Water Act. The Department of the Army will apply for a WQC from the Pennsylvania Department of Environmental Protection. Construction in "waters of the United States" will not take place until the WQC is modified. Comments regarding the water quality issues shall be submitted to:

Pennsylvania Department of Environmental Protection
Northeast Regional Office
90 East Union Street – 2nd Floor
Wilkes-Barre, Pennsylvania 18701-3296

for WESLEY E. COLEMAN, JR.
Chief, Civil Project Development Branch
Planning Division

WYOMING VALLEY LEVEE RAISING PROJECT, LUZERNE COUNTY, PENNSYLVANIA

ENVIRONMENTAL ASSESSMENT

Abrahams Creek Diversion Structure and Levee Penetrations

December 2003

Executive Summary

The purpose of this Environmental Assessment (EA) is to obtain compliance with the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended, for actions being considered as a part of the Wyoming Valley Levee Raising Project, Pennsylvania. The project authorization includes both structural and non-structural components for achieving comprehensive flood hazard protection and mitigation for flows of 318,500 cubic feet per second in the Susquehanna River. The flood control project has been the subject of several previous NEPA documents, a major feasibility report, and two General Design Memorandums (GDMs).

Specific actions proposed in this EA are modifications to upgrade and repair (1) the Abrahams Creek diversion structure in Swoyersville, Pennsylvania, and (2) approximately 26 sewer and stormwater penetrations throughout the levee system. Work would include slip-lining pipes, adjusting gates, constructing an apron, replacing seals, cleaning and painting, grouting tunnels/pipes, and repairing collapsed pipes.

Minor impacts to waters of the United States are unavoidable due to physical, safety, and engineering constraints. No practicable alternatives were identified that would accomplish the project purpose and need and not result in a discharge in waters of the U.S. Impacts have been minimized to the extent practicable. Appropriate and practicable steps to minimize potential adverse impacts would be incorporated into the project. These include implementing best management practices such as the use of silt fences, and stabilizing exposed soils by seeding or the use of hay. The proposed work would not have an adverse affect on any threatened or endangered species, or their critical habitat. Work would also not have an affect on any property eligible or on the National Register of Historic Places. A state water quality certification or waiver would be obtained prior to the initiation of construction.

The project would ensure long-term flood protection. No appreciable or significant adverse effects either individually or cumulatively, is expected. The proposed action has been coordinated with concerned agencies and the public. This assessment supports the conclusion that the proposed project does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, a finding of no significant impact will be prepared.

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1.0 PURPOSES, NEED, AND SCOPE OF ACTIONS

1.1 Purpose

The penetrations and Abrahams Creek diversion structure were originally constructed or modified from the 1940's to 1970's. If they are not updated and improved, these original structures present the risk of flooding to the Wyoming Valley even with the raised levee and floodwall system in place. The purpose of the actions covered in this environmental assessment (EA) is to reduce the risk of flooding and local levee failure.

This EA documents, evaluates, and provides the public an opportunity to comment on proposed modifications at the Abrahams Creek diversion structure; and various sewer, stormwater, and water tunnel penetrations throughout the levee (Attachment A, Figures 1, and 2A-2E).

1.2 Need

Abrahams Creek

Abrahams Creek diversion structure modifications are restricted to fourteen (14) 66-inch corrugated metal pipes (CMPs) with manual sluice gates, a structural steel hoisting frame, access bridge, and mechanical hoisting equipment. This approximately 112-foot long structure was constructed in the 1940's as part of the original U.S. Army Corps of Engineers flood protection project. The drainage structure carries the flow from Abrahams Creek under Wyoming Avenue (U.S. Route 11) to the Susquehanna River. The operation and maintenance manual (1986) states that the sluice gates should be closed only when necessary to prevent reverse flow from the Susquehanna River, and should be open at all other times. Reverse flow can occur only when the water surface on the riverside of the structure is higher than the water surface for the impounding basin side of the structure. This information is extracted from the operation and maintenance manual for Swoyersville-Forty Fort, Pennsylvania (March 1986).

Due to the project life being expended, the pipes, gates, and associated structures do not operate as designed. In addition, the asphalt coating on the interior of the pipes is deteriorating allowing the pipes to corrode. Detailed analyses are discussed in the Corps' 2001 Rehabilitation Inspection Report, Abrahams Creek Diversion Structure, Swoyersville, Pennsylvania (August 2002). Should the Abrahams Creek diversion structure fail to operate properly, portions of the levee system and the areas currently protected behind it could flood. The levee system north of the Abrahams Creek diversion structure and U.S. Route 11 is approximately 3 feet lower than the raised top of protection on the south side of U.S. Route 11 (Wyoming Avenue). Raising the levee north of U.S. Route 11 was not necessary, assuming that the diversion structure functioned properly.

Penetrations

The original outfall sewers were constructed in the 1800's to convey storm and sanitary wastewater from the city and municipalities to the Susquehanna River. In the 1930's and 1940's, the Corps constructed water tunnels, which carry water supply lines through the levee. In the early 1970's, the Wyoming Valley Sanitary Authority installed intercepting sewers to convey the valley's wastewater to its regional treatment plant located in Hanover Township. In several locations, the sewers cross under the levee. As they exist today, the outfall pipes (sewers and tunnels) vary greatly in size, age, composition, and condition. Detailed analyses are discussed in the Corps' Susquehanna River Outfall Sewer Inspection Report (July 2000) and Susquehanna River Selected Outfall Sewer and Flood Gate Inspection Report (February 2003).

An evaluation of sewer and water tunnel penetrations through the levee was conducted in 2000 and 2001, resulting in engineering reports dated July 2001 (34 outfalls evaluated) and February 2003 (58 outfalls evaluated including 34 assessed in 2000). The repair of penetrations were part of the original Corps' project; however, an investigation of their condition and identification of flood risk to the area was overlooked in the 1996 General Design Memorandum (GDM). As documented in the engineering reports, each of the levee penetrations were inspected and recommendations made to ensure the integrity of the flood protection project, as appropriate. As a result, 26 penetrations were determined critical to maintaining the integrity and Agnes-level flood protection. The collapse of one of these pipes during a flood event could cause levee failure, resulting in millions of dollars in damages and potential loss of life.

1.3 Scope

The scope of the impact analysis is specific to the proposed actions. The impacts analysis includes an evaluation of land use, soils, geology and topography, air quality, water resources, terrestrial resources, rare and endangered species, wild and scenic rivers, cultural resources, hazardous and toxic waste, aesthetics and recreation, socio-economic setting, noise, infrastructure, public services, and safety. Environmental justice and cumulative impacts are assessed for the specific areas of impact and for the surrounding area of influence. Coordination with agencies and public involvement is also documented.

2.0 ALTERNATIVES EVALUATION

2.1 Abrahams Creek (Swoyersville, Pennsylvania)

The project at Abrahams Creek proposes to slip line the existing pipes by installing new pipes inside the fourteen (14) existing 66 inch CMPs. Eight (8) alternatives of varying pipe configurations, sizes, and materials were evaluated and compared to the "no action" alternative.

The pipe capacity for the existing structure was calculated with 14, 63-inch CMPs (actual inside diameter of the pipes) and used for comparison with the proposed modification scenarios. This constitutes the "no action" alternative. Also considered was the elimination of one or two barrels (pipes) along with slip lining the remaining barrels.

The capacity of each modification was calculated and the pond elevation versus pipe capacity data was input into the interior drainage models for 6 hypothetical storms: 2, 5, 10, 25, 50, and 100-year events. The models were run and the peak pond elevations with the modifications were compared.

The inner diameter of the pipes dictates the capacity of the pipes since they are flowing under inlet control for almost the entire duration of the hypothetical events. Therefore, the modifications with the largest amount of area available to carry flow are the ones that cause the least and most acceptable increase in pond elevation (Attachment A, Figures 3 and 4).

The alternatives presented in Table 1 were evaluated to determine if they were technically feasible (engineeringly possible) and environmentally acceptable (avoid or minimize impacts to the maximum extent possible).

TABLE 1

		Peak Ponding Elevation						
Alternative	**Description***	**2-year**	**5-year**	**10-year**	**25-year**	**50-year**	**100-year**	**100-year Modified minus Existing**
No Action	14, 63" CMPs	536.4	537.8	538.7	539.9	540.3	541.5	0.0
1	14, 56" Ultra Flo	536.5	538.0	539.0	540.2	540.6	541.9	0.4
2	14, 54" Ultra Flo	536.6	538.2	539.3	540.5	540.9	542.2	0.7
3	13, 56" Ultra Flo	536.7	538.3	539.4	540.5	541.0	542.2	0.7
4	13, 54" Ultra Flo	536.9	538.6	539.7	540.8	541.3	542.5	1.0
5	12, 56" Ultra Flo	537.0	538.7	539.8	540.9	541.4	542.6	1.1
6	14, 50.7" HDPE	536.9	538.7	539.9	541.0	541.5	542.7	1.2
7	14, 49.9" HDPE	537.0	538.8	540.0	541.2	541.7	542.9	1.4
8	14, 48.9" HDPE	537.1	539.0	540.2	541.4	541.9	543.1	1.6

***All diameters given as inner diameters**

The "No Action" alternative would not allow modifications to the dysfunctional and outdated Abrahams Creek diversion structure; therefore, jeopardizing Agnes-level flood protection and the integrity of the levee in this location. This is not considered an acceptable alternative because the overall effectiveness of the Wyoming Valley flood protection project requires a functional diversion structure at Abrahams Creek.

Alternatives 6, 7, and 8 create unacceptable ponding elevations resulting in possible induced damages. The No Action Alternative and Alternatives 6, 7, and 8 are excluded from further evaluations.

Table 2 screens the alternatives further to identify the most cost-effective solution among the remaining solutions meeting engineering and environmental standards.

TABLE 2

Alternative	Description	Lining/Sealing/ Grouting Cost	Pipe Elimination Cost	Total Cost
1	14, 56" Ultra Flo	$1,064,000	$0	$1,064,000
2	14, 54" Ultra Flo	$1,064,000	$0	$1,064,000
3	13, 56" Ultra Flo	$988,000	$20,000	$1,008,000
4	13, 54" Ultra Flo	$988,000	$20,000	$1,008,000
5	12, 56" Ultra Flo	$912,000	$40,000	$952,000

Alternative 5 met the evaluation criteria. Not only does this alternative meet the requirements for Agnes-level flood protection and a reduction of flood damage impacts; it is also the most cost-effective alternative from a comparative basis. This alternative increases the existing water surface elevation of the 100 year event by 1.1 feet, however this increase has been determined not to impact existing structures. Alternative 5 is the preferred alternative and is evaluated in detail in Section 4. Work at the diversion structure would consist of the following:

(a) Plug 2 of 14 barrels with flowable fill. These two barrels will no longer be used to convey water under Wyoming Avenue (U.S. Route 11).

(b) In the remaining 12 pipes, install 56-inch inside diameter Ultra Flo pipes and use grout or shotcrete to fill the void between the 2 pipes.

(c) Install a 10-foot-wide apron along the upstream end of the structure and slush grout or armor the upstream slope to the high waterline. This would entail excavating out a sufficient area in the stream channel for the footings.

(d) Provide a new structural connection between the pipe sleeves and sheet pile designed for 30-foot head in either direction.

(e) Adjust the sluice gate wedges on the remaining 12 gates to allow proper closing.

(f) Replace the brass seal on Gate No. 11.

(g) Replace the operating nut for Gate No. 7 so it will open.

(h) Blast clean and paint the gates, frames, and sheet pile (expose two feet of sheet pile).

(i) Replace 12 manual operators on the remaining 12 sluice gates. Recommend two new drills instead of one due to the number of gates.

(j) Replace the rolled steel stems on the 12 sluice gates that will remain in use.

(k) Install two visual staff gages, one on the riverside and one on the landside.

(l) Excavating out sufficient streambed material to perform the work listed above, along with creating temporary water diversion structures to de-water the work site.

Analyses and reviews conducted during plans and specifications, and construction phases will refine these recommendations, if necessary. Detailed information to support the information presented here can be found in the *2001 Rehabilitation Inspection Report, Abrahams Creek Diversion Structure, Swoyersville, Pennsylvania* (August 2002).

2.2 Penetrations (throughout Wyoming Valley Flood Protection Project)

The alternatives presented below are evaluated based on the Corps' *Susquehanna River Outfall Sewer Inspection Report* (July 2000) and *Susquehanna River Selected Outfall Sewer and Flood Gate Inspection Report* (February 2003).

The "No Action" alternative would not allow modifications to various storm and sewer outfalls through the flood protection project; therefore, jeopardizing Agnes-level flood protection and the integrity of the levee. This is not an acceptable alternative as effective drainage and reduced risks of backwater are necessary components of the overall effectiveness of the Wyoming Valley flood protection project.

A second alternative would be to modify each and every penetration through the levee to ensure proper functioning. This is not an acceptable alternative because modification of all penetrations would be very costly and each penetration does not provide the same amount of benefit to the flood protection system. Modifying every penetration may not be engineeringly necessary and is not cost-effective. Some penetrations are more integral to maintaining Agnes-level flood protection compared to others.

A third alternative is to modify (install gates, slip line, provide a second line of protection) on penetrations that are considered integral to proper functioning of the flood control project during an Agnes-level event. Modifications at most locations are to prevent failure of the levee by pipe collapse or seepage. The collapse of one of these pipes during a flood event could cause levee failure, resulting in millions of dollars in damages and potential loss of life. This alternative has the effect of decreasing the probability that flood damages would occur. The Corps evaluated the list of penetrations through the levee system, documented in the *Susquehanna River Outfall Sewer Inspection Report* (July 2000) and the *Susquehanna River Selected Outfall Sewer and Flood Gate Inspection Report* (February 2003), and determined that approximately 26 of the penetrations were integral to providing Agnes-level flood protection. The outfalls and recommendations for repair are presented in Table 3. Impacts associated with implementing these actions are discussed in Section 4.

TABLE 3

Outfall #	Location	Description	Drainage Function	Estimated Cost	Real Estate Classification*	Presumed Access**	Will Outfall be Plugged?
2	Hanover Twp. Tunnel	Grout the tunnel solid around water line(s).	Encase water mains	$81,100	Other - Water Company	Landside & Riverside	NA, tunnels will be grouted solid around the existing water lines; however, the water lines will remain open and operational.
8	D&H Flood Control Pump Station (Wilkes-Barre)	Pressure grout the leak in the 42" pipe between the pump station intake chamber and the WVSA diversion chamber.	Stormwater & sanitary overflow	$7,400	Other - Ownership Disputed - WB or WVSA	Landside	No
8	D&H Flood Control Pump Station (Wilkes-Barre)	Repair possibly by slip lining the deteriorated section of the 42" pipe between the pump station intake chamber and riverside of the levee.	Stormwater & sanitary overflow		Other - Ownership Disputed - WB or WVSA	Landside & Riverside	No
10	Ross Street Flood Control Pump Station (Wilkes-Barre)	Repair bottom of 84" pipe between WVSA diversion chamber and the pump station intake chamber using concrete or grout. Insert perforated liner into 12" drain line and grout annular space at outlet end.	Stormwater & sanitary overflow	$26,200	Other – WB	Landside	No
11	Market Street Flood Control Pump Station (Wilkes-Barre)	Pressure grout leaking joint at junction between brick sewer and WVSA diversion chamber. Parge or pressure grout brick sewer where bricks have fallen out.	Combined sewer	$7,400	Other - WB	Landside	No
12A	Plymouth Water Tunnel at Mras St.	Remove grout around pipes at bulkhead and replace with link-seal.	Encase water mains	$7,600	Other - Water Company	Landside	NA
12B	Plymouth Water Tunnel at Flats St.	Remove grout around pipes at bulkhead and replace with link-seal. Cut back roots & treat w/ herbicide. Repair/replace river side endwall manhole (not included in cost).	Encase water mains	$8,500	Other - Water Company	Landside	NA

TABLE 3

Outfall #	Location	Description	Drainage Function	Estimated Cost	Real Estate Classification*	Presumed Access**	Will Outfall be Plugged?
12B	Plymouth Water Tunnel at Flats St.	Remove grout around pipes at bulkhead and replace with link-seal. Cut back roots & treat w/ herbicide. Repair/replace river side endwall manhole (not included in cost).	Encase water mains	$8,500	Other - Water Company	Landside	NA
13	Coal Creek Relief Culvert(Plymouth)	Pressure grout leaking crack in 84" concrete barrel	Stormwater	$6,400	Owned by NFS	Landside	No
15	North of Wadham Creek Pump Station (Plymouth)	Slip-line portion of pipe under levee.	Stormwater & sanitary overflow	$36,200	Owned by NFS	Landside & Riverside	No
16A	Plymouth WVSA Pumping Station	Reroute pipes from catch basin on landside and grout pipe solid under levee.	Stormwater	$22,100	Other - Owned by Local Township - Possible Relocation	Landside & Riverside	Yes, flow rerouted
17A	Plymouth Outfall at Ferry Street	Line section of pipe under the levee using cure-in-place methods, remotely cut in service laterals.	Combined sewer	$35,100	Other - Ownership Disputed	Landside & Riverside	No
19	Woodward Flood Control Pump Station (Kingston-Edwardsville)	Pressure grout leaking joints in 16'x 16' pressure culvert, (2)- 6'x 6' gravity outfalls, and (2)- 60" culverts.	Stormwater & sanitary overflow	$30,900	Owned by NFS	Landside & Riverside	No
21	Loveland Flood Control Pump Station (Kingston-Edwardsville)	Slip-line 182 linear feet of pipe under levee.	Stormwater & sanitary overflow	$39,200	Other - Owned by Local Township	Landside & Riverside	No
22	Kirby Park (Wilkes-Barre)	Slip-line portion of 24" pipe under levee.	Stormwater	$31,600	Other - Owned by Local Township	Landside & Riverside	No
26	Church Street Flood Control Pump Station (Kingston-Edwardsville)	Slip-line portion of 24" sanitary overflow pipe under levee.	Sanitary overflow	$41,100	Other - Owned by Local Township	Landside & Riverside	No
26A	Kingston Water Tunnel Upstream of Church St. Pump Sta.	Grout tunnels around water line(s) or install bulkhead at middle with new manhole access on river side.	Encase water mains	$81,100	Other - Water Company	Landside & Riverside	NA, tunnels will be grouted solid around the existing water lines; however, the water lines will remain open and operational.

TABLE 3

Outfall #	Location	Description	Drainage Function	Estimated Cost	Real Estate Classification*	Presumed Access**	Will Outfall be Plugged?
26B	Kingston Water Tunnel at corner of Church St.	Grout tunnels around water line(s) or install bulkhead at middle with new manhole access on river side.	Encase water mains	$81,100	Other - Water Company	Landside & Riverside	NA, tunnels will be grouted solid around the existing water lines; however, the water lines will remain open and operational.
30	Butler Street Storm Sewer	Repair or replace end section of 15" vitrified clay pipe and possibly replace flapgate.	Stormwater		Owned by NFS	Landside & Riverside	No
32	Forty Fort Drainage Structure #2	Excavate and repair collapsed pipe and slip-line portion under levee	Stormwater	$22,400	Owned by NFS	Landside & Riverside	No
33A	Forty Fort Drainage Structures #3	Slip-line the portion under the levee of the 18" CMP.	Stormwater	$38,100	Owned by NFS	Landside & Riverside	No
33B	Forty Fort Drainage Structures #4	Slip-line the portion under the levee of the three 66" CMP's.	Stormwater	$149,400	Owned by NFS	Landside & Riverside	No
36	Exeter Sanitary Overflow at Hicks Crk	Slip-line portion of pipe under the levee.	Sanitary overflow	$41,100	Other – WVSA	Landside & Riverside	No
7	Wilkes-Barre - Kirby Park Storm Outfall	Replace sluice and flap gate.	Stormwater	$20,300	Owned by NFS	Landside & Riverside	No
8	Kingston - Dawes Ave. Storm Outfall	Replace flap gate.	Stormwater	$19,700	Other – Owned by Local Township	Landside	No
14	Forty Fort - Abrahams Creek	Replace hinge arm on middle flap gate.	Stormwater	$15,000	Owned by NFS	Riverside	No
15	Plymouth - Ferry Street Diversion Chamber	Replace flap gate.	Combined sewer	$10,300	Other - WVSA	Riverside	No

*WB=City of Wilkes-Barre, WVSA=Wyoming Valley Sanitary Authority; O&M=operation and maintenance

**While construction work may occur on the riverside of the levee, it is not anticipated that any work will occur within "waters of the United States," except at Outfall #19. Work will be within the floodplain, but not necessarily within jurisdictional waters.

3.0 EXISTING CONDITIONS

Detailed information on existing conditions can be found in the 1996 Phase II GDM/SEIS and September 2002 EA. This EA provides a brief summary of existing conditions along with pertinent changes since these documents were prepared.

3.1 Climate

The climate in this part of the Susquehanna River basin is temperate. The average annual temperature is approximately 49 degrees Fahrenheit, and the annual precipitation is approximately 40 inches. Cold winters with snow accumulation, spring thaws and runoff, and summer thunderstorms are common. This hydrometeorological pattern causes seasonally high water events as well as summer flooding. Occasional hurricanes or tropical storms may affect the basin and river level, either directly or indirectly.

3.2 Land Use

The majority of the actions covered by this EA would be in the flood plain of the Susquehanna River. In this region, there are three main types of flood plain land uses:

(1) Forested flood plains. These are mainly the flood-prone, riverine wetland areas that have not been converted to agriculture and subsequent urban land uses.
(2) Flood plains that have been converted to agricultural land use. The average condition for these areas include active crop farming and some livestock management.
(3) Flood plains that have infrastructure across the river (flood plain and channel) as well as throughout the flood plain. It is in these urbanized areas that most of the proposed actions would take place.

Current land use along the Susquehanna River, Wyoming Valley, is urban and sub-urban. Plans for cultural, economic, and recreational revitalization in Wilkes-Barre are evident in local brochures; however, actual designs and funding for these features have not progressed beyond planning stages. This is further addressed in Section 6.0, Cumulative Impacts.

3.3 Soils

A variety of soil types exist within the project area. The majority of these soils are agricultural and are typical of the Susquehanna River valley. These vary from well-drained soils with sands and coarse gravel to poorly drained soils in areas near wetlands and streams. There are some urbanized areas where the sub-soils are similar to the agricultural soils but the surface is impervious.

3.4 Prime and Unique Farmlands

Prime farmland is available land that provides the best combination of physical and chemical characteristics for producing crops. Pursuant to coordination with the Natural Resource Conservation Service (letter dated 10 December 2001, Attachment C) and the Luzerne County Soil Survey, no prime or unique farmlands are located within the proposed project area.

3.5 Geology and Topography

The ancestral Susquehanna River valley was deepened by glaciation during the Pleistocene era, but when these glaciers receded, the valley was filled with clays, silts, sands, gravel, cobble, and boulders. The bedrock surface at the bottom of the valley, at one point, is about 300 feet below the present land surface. Also, abandoned underground coal mines have created subsidence of the valley floor in some areas.

The topography of the Susquehanna River valley is characterized by a broad, flat flood plain (0-10% slopes) with moderately steep mountains (greater than 20% slopes) on each side. Most of the actions addressed in this EA would occur or have already occurred in the flood plain areas.

3.6 Air Quality

Based on the *Commonwealth of Pennsylvania Ambient Air Quality Monitoring Report* (1999), the air quality in and surrounding Luzerne County can be assumed to be meeting health-based National Ambient Air Quality Standards (NAAQS). Ambient air quality is determined by measuring the ambient pollutant concentrations of particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, and ozone. These concentrations are then compared to corresponding standards as determined by the U. S. Environmental Protection Agency. The closest monitoring site in Pennsylvania to Luzerne County is in adjacent Lackawanna County to the northeast. For the purposes of this environmental documentation, the conditions in Lackawanna County are assumed to also occur in Luzerne County.

Pollutant	**NAAQS Concentration**	**1999 Measured Concentration**
Carbon monoxide (CO)	9 ppm, 8-hour average	3 ppm
Lead (Pb)	1.5 ug/m^3, quarterly average	<0.25 ug/m^3
Nitrogen dioxide (NO_2)	0.053 ppm, annual mean	<0.020 ppm
Ozone (O_3)	0.120 ppm, 1-hour average	0.111 ppm
Particulate matter (PM_{10})	50 ug/m^3, annual mean	12 ug/m^3
Sulfur dioxide (SO_2)	0.030 ppm, annual mean	0.007 ppm

The entire Commonwealth of Pennsylvania is in a non-attainment zone for ozone (Local Flood Protection Project, Lackawanna River at Scranton, Pennsylvania, EA March 2001); however, the project area is assumed to be just below the standard and in local attainment. Luzerne County has and is expected to continue to have good air quality conditions.

Personal communication with the Region 2 (Wilkes-Barre, Mark Wejkszner, 11 March 2003) office of Pennsylvania Department of Environmental Protection (PADEP) indicated that all of Pennsylvania is in non-attainment for ozone and is considered an ozone transport area. Luzerne County falls into the marginal category of ozone non-attainment.

3.7 Streams

The portion of the Susquehanna River in the study area is listed as a warmwater recreational fishery for a majority of its length. The tributaries to this river vary in their quality and size. Some large tributaries, such as the Lackawanna River, have been degraded due to a variety of factors including urbanization, combined sewer overflows and abandoned mine land drainage (acid and metals).

There are numerous riffle and pool complexes along this portion of the Susquehanna River. The vast majority of the river channel would remain as it is today, and would not experience effects from either the physical construction of the levee raising project or from any of the non-structural actions.

3.8 Wetlands

There are several different wetland types located in the study area. They range from broad, flat forested and emergent wetlands located in the Susquehanna River flood plain to smaller, somewhat linear wetlands located along the tributaries to the river. Some of these wetlands exist in the urbanized landscape and some are located on agricultural lands. All of the above wetlands provide a variety of functions for both humans and the aquatic ecosystem. These functions vary by landscape setting. For instance, the flood plains along the Susquehanna River have the following three main functions: habitat, water quality and flood water attenuation. On the smaller tributaries, the wetlands serve as habitat corridors, water quality filtration, and as groundwater discharge points.

National Wetland Inventory (NWI) maps were reviewed by the Corps to document the existing wetland resources as well as any other aquatic resource that may be affected by current design and construction modifications to Abrahams Creek and various penetrations through the Wyoming Valley Levee Raising Project (Attachment A, Figure 5). During this review, project segments were checked for encroachment into wetlands or other "waters of the United States." Based on available information, no wetlands are located directly at the penetrations. However, a wetland parcel is located in the vicinity of the Loveland culvert area where there is proposed penetration work. In particular a small emergent wetland parcel may be effected (less than 0.05 acre) by construction road access to the work site. For discussions on avoidance and minimization see section 4.8.

3.9 Wildlife

All of the species in the study area are numerous or common in Pennsylvania and are somewhat tolerant of human effects on the landscape. Typical animal species in the area include white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanos*), gray squirrel (*Scalopus aquaticus*), opossum (*Didelphis marsupialis*), striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*). Common bird species include American robin (*Turdus migratorius*), mallard ducks (*Anas platyrhynchos*), Canada geese (*Branta canadensis*), wild turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), woodpeckers (family Picidae), nuthatches (*Sitta sp*.), eastern bluebird (*Sialia sialis*), starlings (*Sturnus vulgaris*), black-capped chickadee (*Parus*

atricapillus), northern cardinal (*Cardinalis cardinalis*), warblers (family Parulidae), and sparrows (family Fringillidae). A variety of amphibians and reptiles can also be found including Eastern garter (*Thamnophis sirtalis sirtalis*) and black rat *(Elaphe obsoleta obsoleta*) snakes; box (*Terrapene carolina carolina*), painted (*Chrysemys picta picta*), and snapping turtles (*Chelydra serpentina*); and green frog (*Rana clamitans melanota*), tree frog (*Hyla versicolor*), and American toad (*Bufo americanus*).

3.10 Terrestrial Resources/Vegetation

Typical woody vegetation in the area includes such species as red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvania*), river birch (*Betula nigra*) willow (*Salix sp*.), American elm (*Ulnus americana*), alder (*Alnus sp*.), sycamore (*Plantus occidentalis*), and pignut hickory (*Carya glabra*). The non-woody vegetation consists of common grasses (*Poa* and others) and typical flood plain vegetation. While the same general amount and type of vegetation exists since the 1996 and 1998 NEPA documentation, it is slightly more mature and woody.

3.11 Rare, Threatened, and Endangered Species

There are 15 known threatened or endangered species in Pennsylvania. An EA dated August 1998 documented coordination with the U.S. Fish and Wildlife Service (USFWS) regarding potential impacts to the Federally-listed peregrine falcon (*Falco peregrinus*) and Indiana bat (*Myotis sodalis*). The peregrine falcon has since been removed from the endangered species list (25 August 1999; Federal Register). In addition, habitat for the endangered Indiana bat may be adequate in the Kirby Park Natural Area directly across the Susquehanna River from Wilkes-Barre (USFWS letter dated 11 March 2002, Attachment C).

3.12 Wild and Scenic Rivers/American Heritage Rivers

The Upper Susquehanna-Lackawanna River Watershed is listed as an American Heritage River per Executive Order 13061 on 11 September 1997. The Upper Susquehanna-Lackawanna Watershed, as delineated by the U.S. Geological Survey, comprises nearly 1,800 square miles of land and almost 1,600 miles of perennial rivers and streams. Lackawanna and Luzerne counties constitute the core of the watershed, which includes portions of several other counties and more than 150 municipalities. The corridor begins along the Lackawanna at Thompson, proceeds to the confluence of the Lackawanna with the Susquehanna at Pittston, and follows the Susquehanna through the Wyoming Valley to Sunbury. The watershed includes the Wyoming and Lackawanna Valleys, plus adjoining mountainous areas that provide headwaters for the numerous streams that flow to the Susquehanna River. Its major urban centers are Wilkes-Barre and Scranton. Other population centers within the watershed include Bloomsburg, Carbondale, Dickson City, Dunmore, Hazleton, Kingston, Nanticoke, and Pittston.

There are no wild or scenic river designations in the study area.

3.13 Cultural Resources

All of the study area was subject to a broad-brush cultural resources survey in 1995. To accomplish this, the Corps conducted a geomorphological investigation to determine the most probable areas for archeological resources. As a result, alluvial and depositional flood plains were determined prime locations for buried archaeological resources. Also, a structural survey was completed for each structure in the flood plain that may be affected by induced flooding from the upstream levee raising. Reference 1996 GDM/SEIS and September 2002 EA.

In addition, below is the pertinent information from the Corps and State Historic Preservation Officer (SHPO) Memorandum of Agreement for the Wyoming Valley Levee Raising Project:

TREATMENT OF HISTORIC PROPERTIES

1. Identification. The Corps, in consultation with the Pennsylvania SHPO, has conducted an architectural survey of the areas having the potential to be affected by the Project, to determine the presence of any historic properties which are included in, or eligible for inclusion in, the National Register. If any of these properties are to be modified, removed, or otherwise affected by elements in the mitigation plan, the Corps will evaluate the property in consultation with the Pennsylvania SHPO against the National Register criteria, in accordance with 36 CFR Part 800.4(c).

2. Evaluation. Should any properties be identified within the area of the Project be determined to be eligible for inclusion in the National Register, the Corps will provide to the SHPO detailed analyses of the proposed removal, relocation, or alteration, including any alternatives that would avoid the adverse effects to the historic properties. The Pennsylvania SHPO and the Council will review the documentation, taking into account the extent of impacts to historic properties, the alternative analyses, the possibility and effectiveness of mitigation measures, and expressed public interest, and within 30 days provide recommendations to the Corps. The Corps will take into account the recommendations of the Pennsylvania SHPO and the Council in reaching a final decision regarding the removal, relocation, or alteration of the historic property.

3. Mitigation. If avoidance is not feasible, a mitigation plan will be developed by the Corps in consultation with the Pennsylvania SHPO and implemented. The plan shall be consistent with the Secretary of the Interior's Standards and Guidelines for Architectural Documentation. Prior to implementation, the plan will be provided to the Pennsylvania SHPO for review and approval.

3.14 Hazardous, Toxic, and Radioactive Waste (HTRW)

The Phase II GDM/SEIS (1996, p. SEIS-12) addresses full rehabilitation of 13 pump stations. Lead, asbestos and polychlorinated biphenyl abatement was completed at the pump stations. Contamination is not known nor expected at any of the work sites for the penetrations. For all sites and all materials, Federal (including Corps guidelines and specifications), state, and local regulations were and continue to be strictly followed.

3.15 Aesthetics and Recreation

The project work sites located along the river floodplain and Wilkes-Barre urban center. Typical urban infrastructure and dwellings as well as recreational facilities and/or opportunities are present within the area. The aesthetics and recreation remain virtually unchanged from the 2002 EA and 1996 GDM/SEIS and is therefore incorporated by reference.

3.16 Socio-Economic Setting

The socio-economic setting includes a review of regional demographics, economics, and education. The U.S. Census Department compiled population estimates, economic condition and other social information for Luzerne County from the 2000 Census. From 1990 to 2000, there was a population decrease of 3.0 percent, and from 1980 to 1990 there was a population decrease of 4.5 percent.

Population: Luzerne County	
Total	319,250
Male	153,795
Female	165,455
Under Age 19	75,675
Age 65 and Over	62,740
White	308,476
Black	5,408
American Indian and Alaska Native	285
Asian	1,860
Other	3,221

Economics: Luzerne County	
Employment	
Managerial	27.7%
Sales and Support	28.1%
Service	15.2%
Farming	.2%
Craft and Repair	9.8%
Labor	19.0%
Income	
Per Capita Income	$18,228
Median Family Income	$43,335
Mean Married Couple Income	$39,908
Mean, Female, No Husband, w/Children	$13,143
Families in Poverty	8.1%
Families w/Children in Poverty	31.1%
Persons 65 years +, Alone, in Poverty	11.0%

Education: Luzerne County	
High School Graduates	81.1%
College Graduates	16.4%

3.17 Noise

Excess noise levels are of concern because it can be annoying and cause adverse health effects. Noise can impact human activities such as conversing, listening to music, working, and sleeping. Noise can also disrupt wildlife behaviors. The project area is located on land adjacent to flood plains and can be generally classified as urban-suburban with moderate noise impacts. Sources of noise pollution in the study area include vehicles travelling along local and state roads, public gatherings, and passive recreational activities (walking, conversing, and skateboarding).

Ambient noise levels through the study area vary by the degree of urbanization. Some areas like Sunbury and Bloomsburg have regional and local infrastructure and development in and near the flood-prone areas of the river. These have higher ambient noise levels than the more rural or isolated municipalities. In general though, the ambient noise levels are low. At times, there may be distant highway noise from traffic along the Susquehanna River valley. Sensitive noise receptors in the vicinity include residential homes, businesses, and public facilities, but none are closer than 50 feet to any area of proposed actions.

3.18 Infrastructure, Public Services, and Safety

Roads and Transportation. The traffic patterns throughout the study area are confined to the transportation corridors along the highways and towns. U.S. Route 11 crosses the Abrahams Creek diversion structure.

Public Facilities. There are many utilities, public and private, located throughout the study area. Some of the public and private utilities are the source of the storm and sewer outfalls proposed for modification.

Public Safety and Flood Protection. Throughout the Wyoming Valley Levee Raising Project, a risk analysis was conducted for various relief culverts and penetrations (storm and sewer outfalls, water tunnels) through the levee. As part of the original flood protection project in the 1940's, these structures had one line of protection (flap or sluice gates) from rising water on the Susquehanna River during high flow events. The risk analysis showed that many culverts and penetrations (including the Abrahams Creek diversion structure) were abandoned and/or had poor pipe conditions and presented a high level of risk for flooding. Although the existing levee will be raised for an Agnes-level event, the various "holes" or pipes through the levee placed the existing system at risk of failure. This risk analysis prompted the structural modifications discussed in previous sections.

Without these modifications, the entire project, communities, and infrastructure are at risk for flood damage if existing flap or sluice gate protection would fail. The modifications would ensure flood protection and still allow adequate internal drainage to the Susquehanna River.

3.19 Environmental Justice

On 11 February 1994, President Clinton issued E.O. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The E.O. requires Federal agencies to identify and address any disproportionately high and adverse human

health or environmental effects of its programs, policies, and activities on minority and low-income populations.

As defined by the "Environmental Justice: Guidance Under the NEPA" (CEQ, 1997), "minority" includes persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, black (not of Hispanic origin) or Hispanic. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The Census Bureau defines a "poverty area" as a Census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level (Census Bureau, 1995).

4.0 IMPACTS EVALUATION

Impacts from the actions evaluated in this EA will be addressed for Abrahams Creek and various penetrations through the levee system. If the actions individually and collectively produce the same impacts, the magnitude and type of impact will be stated one time and not repeated. The *USFWS Coordination Act Report*, dated 20 May 2002 (and valid for 2 years from this date), is included in Attachment C.

4.1 Climate

There would be no temporary, long-term, adverse, or significant impacts on the climate of the study area from any of the actions evaluated in this EA due to the size and nature of the work proposed.

4.2 Land Use

With modifications to Abrahams Creek and the various penetrations, residential and commercial development would be encouraged due to the afforded assurance that it would prosper behind the line of protection. The current zoning patterns and the amount of development are not anticipated to change. In addition, no long-term, adverse, or significant impacts are anticipated.

4.3 Soils

Soils around the penetrations and the Abrahams Creek diversion structure would be excavated to make the necessary repairs and modifications. Excavations would be backfilled and original contours would be reestablished to the extent practicable. No long-term, adverse, or significant impacts to soil composition are anticipated.

4.4 Prime and Unique Farmlands

No long-term or significant impacts are anticipated since there are no prime or unique farmlands within the project area.

4.5 Geology and Topography

Regional geology and topography would remain unchanged as a result of any of the actions evaluated in this EA. However, future flood plain geology and topography in this localized area would not show evidence of flood plain processes as the flood protection project would confine the river waters to the Susquehanna River channel. This process is considered a long-term and minor impact to the geologic and topographic characteristics for this area, locally and regionally.

4.6 Air Quality

Due to the nature of the work proposed, type and amount of equipment to be used, and the duration of the work, emissions would be well below the established Federal conformity emission rate thresholds for non-attainment areas. Therefore, a conformity determination demonstrating the action would not cause a violation of National ambient air quality standards is not required (40 CFR 93 Subpart B). Emissions from the operation of construction equipment would be negligible.

4.7 Streams

Minor and temporary impacts from Abrahams Creek diversion structure and penetration modifications are documented in the attached Clean Water Act section 404(b)(1) evaluation (Attachment B). The Abrahams Creek Diversion Structure would require diversion of stream flow through half of pipes while the other half are repaired and two pipes abandoned. Sandbag cofferdams may be used to de-water the construction site. Work would entail excavating, grading and backfilling streambed material to construct the apron and perform the necessary repairs.

All penetrations, except water tunnels, would require temporary sandbag diversions during construction. Water tunnels are merely penetrations that allow access to the storm or sanitary water lines. The water tunnels are not meant to facilitate stream flow, therefore no flow diversion or other wet work would be performed specifically for the water tunnels. Flow through penetration #16A (storm/sanitary lines) would be permanently rerouted.. As plans and specifications progress, recommendations may be modified to include plugging additional pipes, as needed.

4.8 Wetlands

There will only be minor, temporary impacts to wetlands from modifications to penetrations and the Abrahams Creek diversion structure. Access is needed to the riverside of the Loveland Avenue pump station to repair the pump station piping (site #21, see figure 2C). Vehicles would travel along the toe of the levee from U.S. Route 11 (Wyoming Avenue). At the outfall of the Beet Field/Loveland relief culvert there is a low area with wetlands. When the relief culvert was constructed, crushed stone was discharged at the outfall area of the culvert. The crushed stone has become silted in over the years and now supports vegetation. The site is generally wet, depending on the amount of precipitation. Depending on how wet the wetland area is at the time of construction, vehicles would either traverse through the area or if necessary, fill materials (i.e. additional stone, or temporary crossing mat) would be discharged to allow vehicles to drive past

the culvert. Due to the levee and extent of the wetlands, there is no practicable way to allow access the riverside of the pump station without going through the wetlands. Wetland impacts are estimated to be less then 0.05 acres. The minimum amount of fill material would be discharged to allow vehicles to bypass the relief culvert. Fill materials would be stabilized to prevent erosion. No other wetland impacts are anticipated. It should be noted that if a private citizen were to propose the actions described herein, their actions on existing structures (considered operation and maintenance) would be covered by the original Section 404 permit and/or the Pennsylvania State Programmatic General Permit # 2.

4.9 Wildlife

All of the species in the study area are numerous or common in Pennsylvania and are somewhat tolerant of human effects on the landscape. No appreciable adverse effects on fish and wildlife are expected due to the nature of the project and its location. The USFWS concurred with this determination in their 20 May 20 2002, letter to the Corps (Attachment C).

4.10 Terrestrial Resources/Vegetation

The project would occur in areas with prior disturbance and within the city limits of Wilkes-Barre. Therefore, no long-term or significant impacts are anticipated. Areas previously supporting vegetation would be seeded and appropriate erosion control methods would be implemented.

4.11 Rare, Threatened, and Endangered Species

No long-term or appreciable impacts are anticipated. The USFWS concurred that construction of the proposed actions are not likely to adversely affect any Federally-listed or proposed species or their habitat in a letter dated 11 March 2002 (Attachment C).

4.12 Wild and Scenic Rivers/American Heritage Rivers

As part of the American Heritage River Action Plan for the Upper Susquehanna-Lackawanna River Watershed, this flood protection project, modification to, or other actions not jeopardizing the flood protection intent, would not significantly impact the national designation or future funding. As excerpted from the Action Plan,

> [t]he community vision developed for the Upper Susquehanna-Lackawanna Watershed encompasses several major elements. First, a comprehensive study of the watershed's ecosystem should be undertaken to determine how this large restoration initiative could be most effective and efficient. The most pressing environmental problem in the region may be the acid mine drainage produced by abandoned coal mines. This acid mine drainage has a variety of harmful effects beyond the watershed -- it is the largest source of industrial pollution in the Chesapeake Bay and it prevents the free migration of the American Shad from the Chesapeake Bay to the headwaters of the Susquehanna. Innovative acid mine drainage abatement projects, such as the creation of artificial wetlands along streams and creeks that feed into the Susquehanna River, could alleviate this problem.
>
> The second major obstacle to the environmental and economic revitalization of the region is the countless acres of mine-scarred land left from decades-old mining practices. In addition to being

> an environmental blight and a health and safety risk, the prevalence of this mine-scarred land inhibits economic development. As the region runs out of suitable land for industrial development, pristine "greenfields" are a prime target for development. Potential solutions include a revolving fund to support continuing reclamation efforts and a brownfields-like demonstration project to reclaim mine-scarred land so that the land will be suitable for industrial development. At the same time, as a region which suffered in 1972 a flood that was the worst natural disaster in American history (at that time), flood protection should be expanded by employing, where practical, innovative and nonstructural solutions.

It is not anticipated that any of the proposed actions would have or had a negative effect on the listing documentation and goals for this American Heritage River. The Susquehanna River is not part of the Wild and Scenic River system, nor has it been designated as a study river by Congress. Therefore, there would be no impacts in this category from any of the actions proposed in this EA.

4.13 Cultural Resources

No additional long-term or significant impacts are anticipated. A formal letter of concurrence dated 11 December 2002 was sent from the Corps to the SHPO. Verbal concurrence from SHPO was received on 22 January 2003 and Corps documentation of this is included in Attachment C.

4.14 Hazardous, Toxic, and Radioactive Waste

Contamination is not known or expected to occur at any of the proposed work sites. However, if contamination is discovered, appropriate coordination would occur with local, state and federal agencies.

4.15 Aesthetics and Recreation

Access to the specific works sites by the general public would be prohibited during periods of construction. Appropriate signage and necessary barriers would be installed to ensure public safety. Impacts would be temporary and minor in nature.

4.16 Socio-Economic Setting

Due to the nature of the work, no long-term or significant impacts are anticipated from any of the actions evaluated in this EA.

4.17 Noise

Noise from heavy equipment would be generated during periods of work. Work would occur during normal daylight hours. Access routes for equipment, staging areas, and timing of work would be coordinated with local officials to ensure minimal adverse affects.

4.18 Infrastructure, Public Services, and Safety

Roads and Transportation. In general, there would not be a conflict between these actions and major sources of traffic since most of the study area is rural or lightly urbanized and most of the

action would occur in the flood plain, away from major traffic locations. The exceptions may be in the urbanized areas where construction access may occur on road networks.

At the Abrahams Creek diversion structure, there is the possibility of occasional temporary lane closures for unloading pipe, gates, and operators. All materials delivered via this route have turning paths to both sides of the diversion structure. There is plenty of room away from U.S. Route 11 to stockpile materials, park vehicles, etc. A Highway Occupancy permit was discussed with the Pennsylvania Department of Transportation and is not required.

Other than minor local traffic diversions or the occasional temporary street closure, it is not anticipated that these actions would result in appreciable adverse impacts on traffic patterns, volumes, or flows. Traffic diversions would be coordinated with local officials in an effort to minimize potential adverse affects.

Public Facilities. The proposed work would improve the community's infrastructure and increase its flood protection.

Public Safety and Flood Protection. Work to upgrade the pump stations is not scheduled for completion until the summer of 2003; however, emergency backup pumps would be on-site during construction. In general, all of the pump stations would be able to pump when a high water event occurs and also when there is reduced efficiency or where the storm drains may get backed up.

On 24 May 1977, President Carter issued Executive Order (E.O.) 11988 "Flood plain Management". This E.O. requires Federal agencies to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains.

Most of the work proposed would occur within the floodplain; however, by repairing and modifying the penetrations and the diversion structure, the potential for flood loss and damages would be reduced.

4.19 Environmental Justice

The municipalities subject to the proposed actions do not fall into the environmental justice categories, as described in Section 3.19. Work would benefit all those in the community.

5.0 CUMULATIVE IMPACTS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of NEPA of 1969, as amended (42 U.S.C. 4321 et seq.), define cumulative effects as,

> [t]he impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7).

NEPA litigation has made it clear that "reasonable forecasting" is implicit in NEPA and that it is the responsibility of Federal agencies to predict the environmental effects of proposed actions before they are fully known. CEQ's regulations provide for including these uncertainties in the EA (and other NEPA documentation) where the foreseeable future action is not planned in sufficient detail to permit complete analysis. Specifically, CEQ's regulations state,

> [w]hen an agency is evaluating reasonably foreseeable significant effects on the human environment when there is incomplete or unavailable information…[that] cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known…the agency shall include…the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community (40 CFR 1502.22).

Including the cumulative effects of future actions in the analysis serves the important NEPA function of informing the public and potentially influencing future decisions.

The previously, documented cumulative impacts to wetlands have been calculated at 1.94 acres for the entire Wyoming Valley Levee Raising Project. Compensatory wetland mitigation has been provided for unavoidable adverse environmental impacts to aquatic resources. This mitigation includes the creation or enhancement of wetlands adjacent to the river at the D&H railroad bridge mitigation site. The mitigation would consist of a combination of emergent, open water, and forested wetlands.

Past wetland losses from the original levee construction in the 1940's cannot be quantified, but these wetlands were likely similar in type to what remains along the river today. Other wetland losses have recently occurred in the immediate location from private development projects and from several bridges connecting roads on the north and south sides of the river.

Actions by Federal and non-Federal entities that are (1) in the reasonably foreseeable future or can be reasonably forecasted, (2) planned, or (3) on-going in the Wyoming Valley area are summarized below with a brief description of potential impacts.

- Wyoming Valley Levee Raising Project

In 2000, the Corps determined that "all necessary evaluations and modifications to all elements of the existing flood control projects, which include Coal Creek, Toby Creek, Abrahams Creek, and various relief culverts and penetrations through the levee" are within existing Corps' authority provided that these features are found to be technically feasible, environmentally acceptable, and economically justified. Actions approved thus far include modifications to the Wilkes-Barre area levee (changing to a sheet pile wall) and modifications to relief culverts. Future actions that may be evaluated include Toby Creek and elements associated with the proposed riverfront development (discussed below).

- Wyoming Valley Inflatable Dam

The Luzerne County Flood Protection Authority may build an inflatable dam across the Susquehanna River at Wilkes-Barre. However, it is not clear as to whether or not the project

would be feasible or permitable. However, neither the inflatable dam nor the work described in this EA are dependent upon each other.

- Susquehanna River Landing

On 21 December 2001, Corps Headquarters determined that Baltimore District had the authority to review the riverfront development plan proposed by the non-Federal sponsor's contractor and evaluate features that may be implementable as part of the overall flood protection project. These analyses are underway and a draft SEIS is scheduled to be released in early 2004.

- Sanitary Sewage Clean-Up

Sanitary sewage clean-up plans that would improve water quality and encourage use of the river resource for fishing, boating, and swimming are being considered at various levels of government. However, no specific information concerning implementation dates is available.

- PennDOT Actions

The Pennsylvania Department of Transportation (PennDOT) is currently replacing the Carey Avenue Bridge. The causeway is a work in progress. Due to construction phases on the bridge, the causeway extends from one riverbank and then part of the time extends from the other.

Other federal actions within the Wilkes-Barre/Scranton Area Include:

- Nanticoke Creek, PA, Aquatic Ecosystem Restoration Project

The Nanticoke Creek watershed is located in Hanover Township, Luzerne County, Pennsylvania. The watershed is approximately 5 square miles in size. The project area includes Nanticoke Creek (4 miles) and its two tributaries Leuder Creek (2 miles) and Espy Run (3 miles).

- Local Flood Protection Projects, Scranton and Olyphant, Pennsylvania

Albright Avenue. The *Lackawanna River at Scranton, Pennsylvania, Integrated Feasibility Report and Environmental Impact Statement* was completed in January 1992 and an EA for final design changes was completed in July 1996. The project is in the construction phase.

Green Ridge & Plot. The Corps prepared a feasibility report and EIS was completed for these projects in 1999. The project is in the plans and specifications phase.

Olyphant. The Corps prepared a feasibility report and EIS, and subsequently signed the Record of Decision in 1998. The project is in the construction phase.

- Dickson City, Pennsylvania

The District is pursuing funding to finish a feasibility report and EIS for the Dickson City local flood protection project along the Lackawanna River, just downstream of Olyphant.

Across the Lackawanna River from the Borough of Dickson City, the Environmental Protection Agency has prepared an EIS with final recommendations for the clean-up action on the former Marjol Battery factory site. This is a clean-up action being pursued under the Resource Conservation and Recovery Act. The primary constituent of the action is lead.

- Solomon Creek, Pennsylvania, Section 205, Small Flood Protection Project

The Corps has initiated a feasibility study for a Small Flood Protection project in the City of Wilkes-Barre. The study area is along Solomon Creek in the City of Wilkes-Barre and Hanover Township, Pennsylvania. The flood-impacted area is in Wilkes-Barre from Division Street near the Delaware and Hudson Railroad to Division Street near Carey Avenue, and in Hanover from Division Street to the confluence with the Susquehanna River.

- Bloomsburg Feasibility Study

The Corps is conducting a feasibility study and environmental impact statement of a local flood protection project for the Town of Bloomsburg. Bloomsburg is located along the Susquehanna River in Columbia County, Pennsylvania. Should the project be economically justified, and should it pass environmental clearance through the NEPA process, construction is scheduled to commence no earlier than 2006.

6.0 COORDINATION

In compliance with the NEPA requirements, public involvement and agency coordination tasks were completed for the proposed design changes and implementation. Agency coordination was initiated with the USFWS, Pennsylvania SHPO, PADEP, Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Fish and Boat Commission, and others.

A notice of availability stating that the EA is available for a 30-day public review will be published in 2 local newspapers and available at 15 public libraries.

7.0 CONCLUSIONS

This EA has been prepared to minimize and evaluate unavoidable impacts to the environment associated with modifications to the Abrahams Creek diversion structure and various penetrations throughout the levee.

Minor impacts to waters of the United States are unavoidable due to physical, safety, and engineering constraints. No practicable alternatives were identified that would accomplish the project purpose and need and not result in a discharge in the waters of the U.S. Impacts have been minimized to the extent practicable. Appropriate and practicable steps to minimize potential adverse impacts would be incorporated into the project. These include implementing best management practices such as the use of silt fences, and stabilizing exposed soils by seeding or the use of hay. The proposed work would not have an adverse affect on any threatened or endangered species, or their critical habitat. Work would also not have an affect on any property eligible or on the National Register of Historic Places. A state water quality certification or waiver would be obtained prior to the initiation of construction.

The project would ensure long-term flood protection. No appreciable or significant adverse effects, either individually or cumulatively, are expected. The proposed action has been coordinated with other concerned agencies and the public. This assessment supports the conclusion that the proposed project does not constitute a major Federal action significantly

affecting the quality of the human environment; therefore, a finding of no significant impact will be prepared.

ATTACHMENT A

Figures

US Army Corps
of Engineers
Baltimore District

Wyoming Valley,PA
Levee Raising

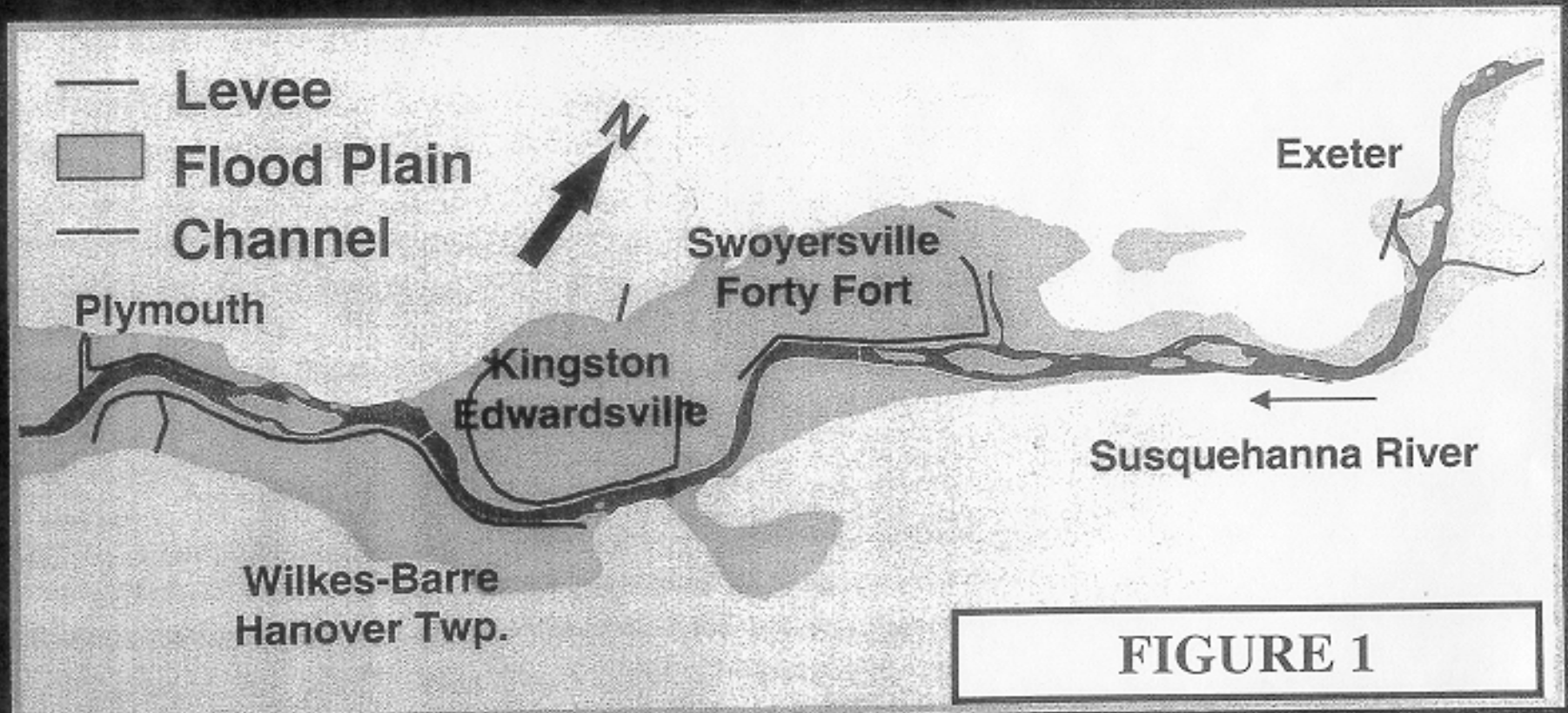
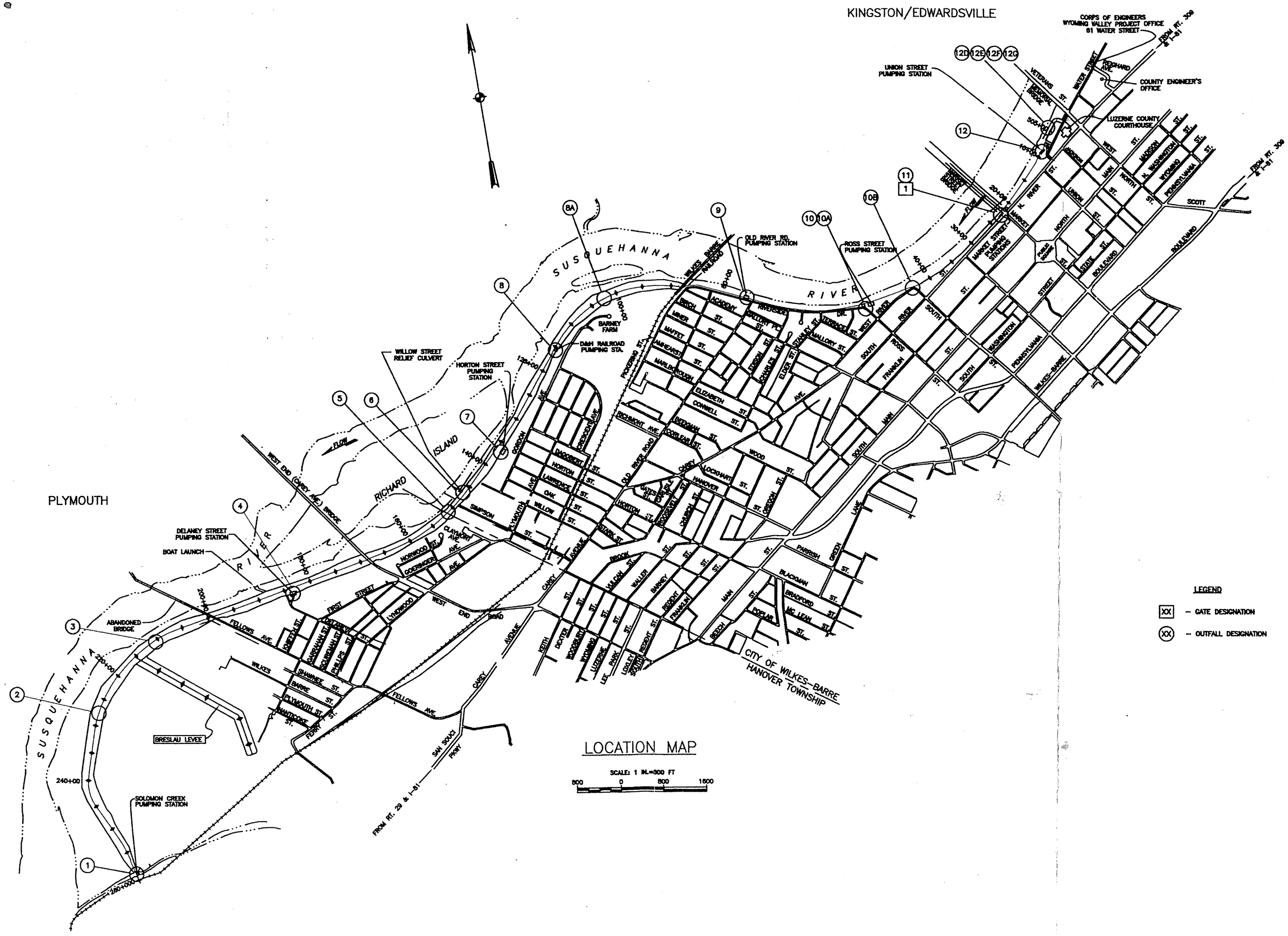


FIGURE 1



LEGEND

[XX] – GATE DESIGNATION

(XX) – OUTFALL DESIGNATION

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REVISIONS

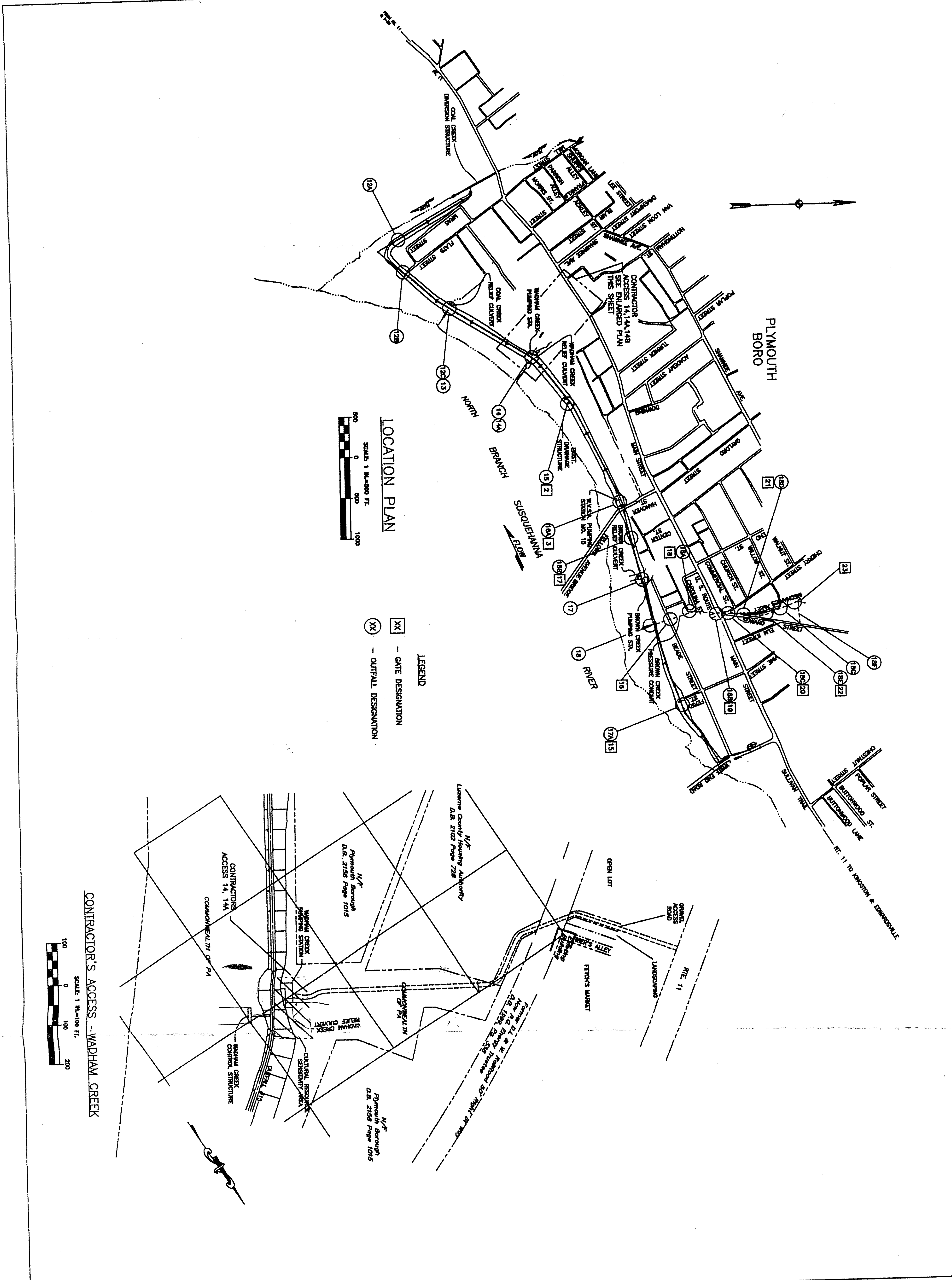
DATE: 5/09/01 DR.BY: MES
SCALE: 1" = 800' CH.BY: SRB

LOCATION MAP – WILKES-BARRE/HANOVER

SUSQUEHANNA RIVER FLOOD CONTROL PROJECTS
WYOMING VALLEY, PENNSYLVANIA
OUTFALL SEWER/GATE INSPECTIONS
WILKES-BARRE/HANOVER

PROJECT NO. 2001-1067-00

DRAWING NO. FIGURE 2A



PLYMOUTH BORO
LOCATION PLAN
SCALE: 1 IN.=500 FT.
500 0 500 1000
LEGEND
XX - GATE DESIGNATION
XX - OUTFALL DESIGNATION
NORTH BRANCH SUSQUEHANNA RIVER
FLOW
COAL CREEK DIVERSION STRUCTURE
COAL CREEK RELIEF CULVERT
WADHAM CREEK PUMPING STA.
WADHAM CREEK RELIEF CULVERT
CONTRACTOR ACCESS 14,14A,14B SEE ENLARGED PLAN THIS SHEET
EXIST. DRAINAGE STRUCTURE
W.V.S.A. PUMPING STATION NO. 15
BROWN CREEK RELIEF CULVERT
BROWN CREEK PUMPING STA.
BROWN CREEK PRESSURE CONDUIT
AVENUE BRIDGE
FLATS STREET
MORGAN LANE
PARRISH ALLEY
MORRIS ST.
FRANKLIN
ACKLEY
BLAIR
LEE STREET
DAVENPORT STREET
VAN LOON STREET
SHAWNEE AVE.
NOTTINGHAM ST.
POPLAR STREET
TURNER STREET
ACADEMY STREET
DOWNING
MAIN STREET
GAYLORD
HANOVER ST.
CENTER ST.
WILLOW ST.
WALNUT ST.
CHERRY STREET
CHURCH ST.
COMMERCIAL ST.
U. S. ROUTE
CAROLINA ST.
EDWARD
ELM STREET
PINE STREET
BEADE STREET
WEST END ROAD
SULLIVAN TRAIL
CHESTNUT STREET
BUTTONWOOD ST.
BUTTONWOOD LANE
RT. 11 TO KINGSTON & EDWARDSVILLE
RT. 11
12A 12B 12C 13 14 14A 15 2 16A 3 16B 17 17 18 16 17A 15 18A 18 18B 19 18C 20 18D 21 18E 22 18F 23
CONTRACTOR'S ACCESS -WADHAM CREEK
SCALE: 1 IN.=100 FT.
100 0 100 200
CONTRACTORS ACCESS 14, 14A
COMMONWEALTH OF PA
WADHAM CREEK PUMPING STATION
WADHAM CREEK RELIEF CULVERT
WADHAM CREEK CONTROL STRUCTURE
CULTURAL RESOURCE SENSITIVITY AREA
OUTFALL #15
N/F Luzerne County Housing Authority D.B. 2102 Page 728
N/F Plymouth Borough D.B. 2156 Page 1015
Former D.L & W. Railroad 60' Right of Way Now P.G. Energy Trustee D.B. 1999, Pg. 336
OPEN LOT
GRAVEL ACCESS ROAD
FETCH'S MARKET
LANDSCAPING
RTE. 11

LOCATION MAP – PLYMOUTH	REVISIONS
SUSQUEHANNA RIVER FLOOD CONTROL PROJECTS WYOMING VALLEY, PENNSYLVANIA OUTFALL SEWER/GATE INSPECTIONS PLYMOUTH	DATE: 5/9/01 · DR.BY: MES SCALE: 1" = 500' · CH.BY: SRB

PROJECT NO. 2001-1067-00
DRAWING NO.
FIGURE 1B

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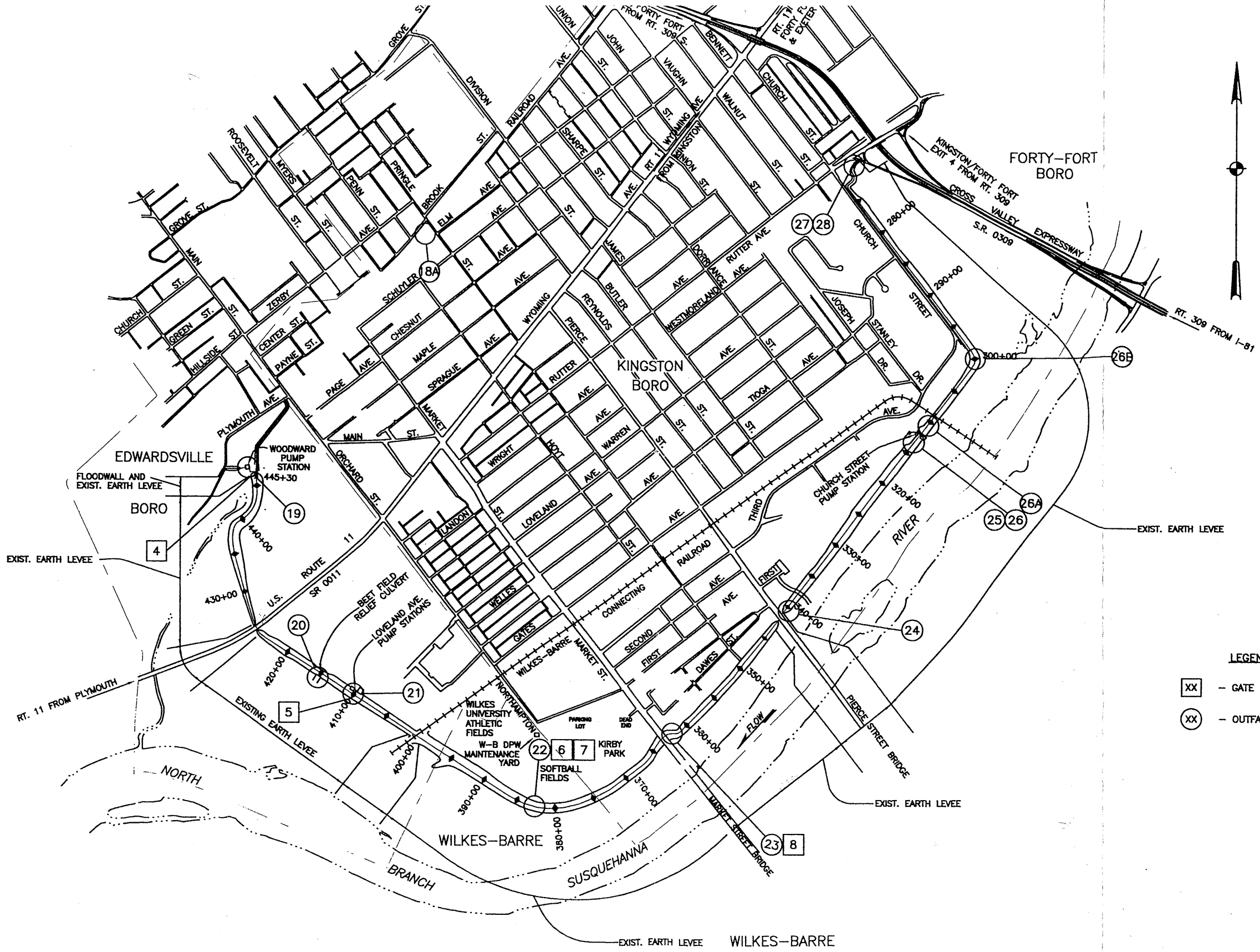
Voice (570) 821-
Fax (570) 821-



LEGEND

XX – GATE DESIGNATION

(XX) – OUTFALL DESIGNATION

LOCATION MAP

SCALE: 1IN. = 600 FT.

600 0 600 1200

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REVISIONS

DATE: 5/09/01 DRAWN: MES

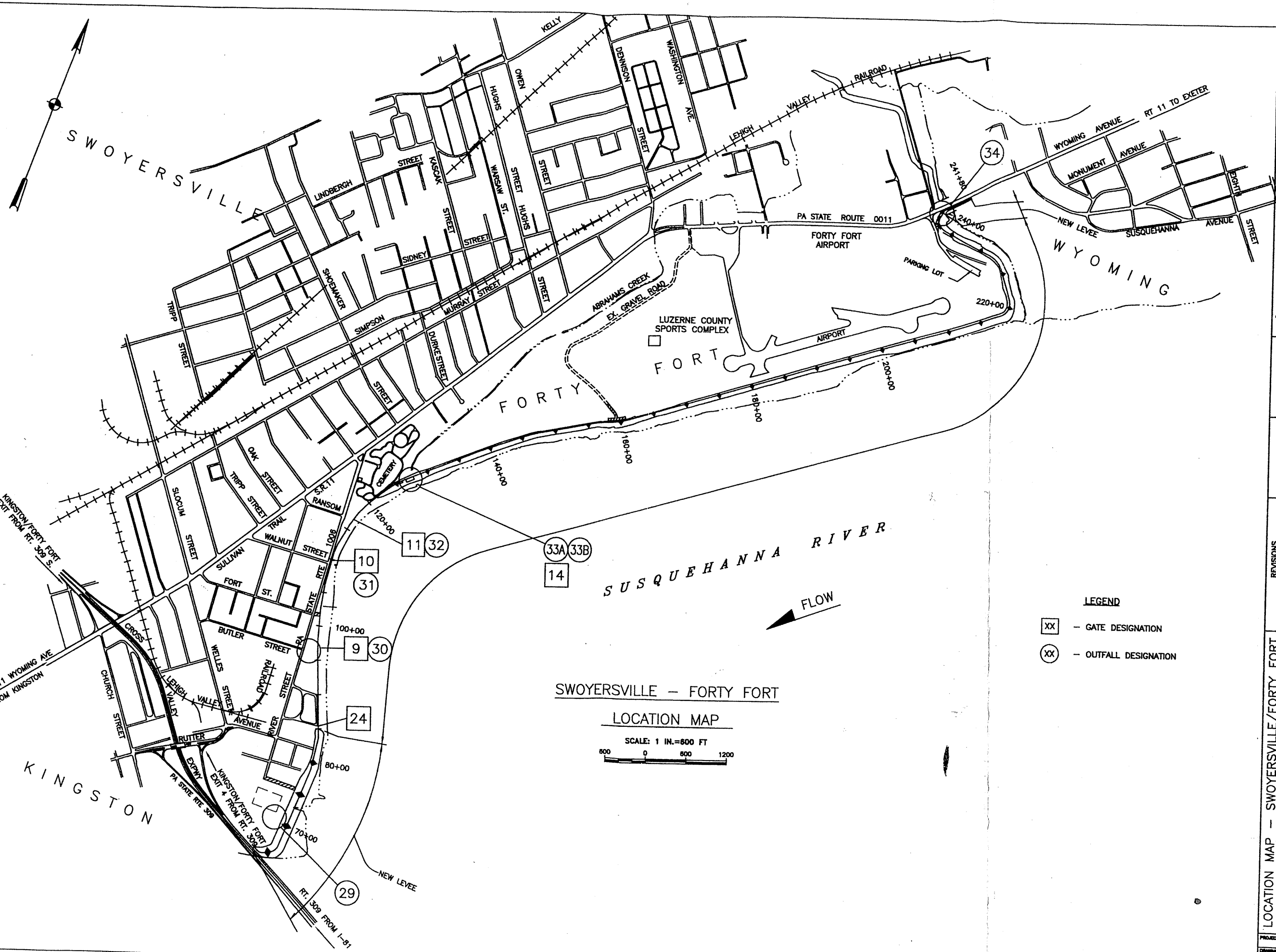
SCALE: 1" = 600' CHKD: SRB

LOCATION MAP - KINGSTON/EDWARDSVILLE

SUSQUEHANNA RIVER FLOOD CONTROL PROJECTS
WYOMING VALLEY, PENNSYLVANIA
OUTFALL SEWER/GATE INSPECTIONS
KINGSTON/EDWARDSVILLE

PROJECT NO. 2001-1067-00

DRAWING NO. FIGURE 1C



SWOYERSVILLE – FORTY FORT

LOCATION MAP

SCALE: 1 IN.=600 FT

500 0 500 1200

LEGEND

[XX] – GATE DESIGNATION

(XX) – OUTFALL DESIGNATION

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REVISIONS

DATE: 5/09/01 DRAWN: MES

SCALE: 1" = 600' CHKD: SRB

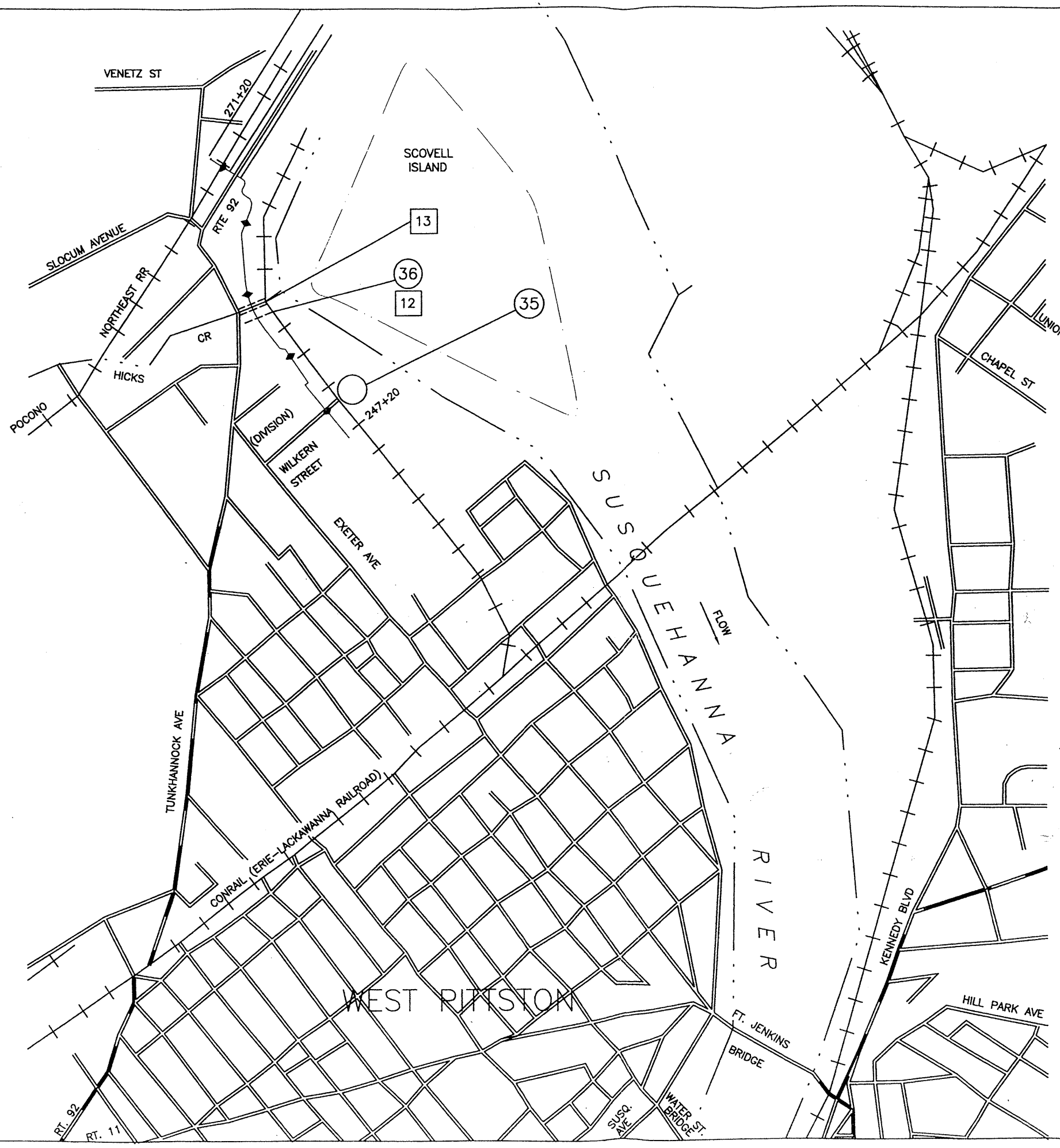
LOCATION MAP – SWOYERSVILLE/FORTY FORT

SUSQUEHANNA RIVER FLOOD CONTROL PROJECTS
WYOMING VALLEY, PENNSYLVANIA
OUTFALL SEWER/GATE INSPECTIONS
SWOYERSVILLE/FORTY–FORT

PROJECT NO. 2001–1067–00

DRAWING NO.

FIGURE 4D



LEGEND

XX – GATE DESIGNATION

(XX) – OUTFALL DESIGNATION

EXETER – LOCATION MAP

NOT TO SCALE

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REVISIONS

DATE: 2/06/01 DRLBY: MES
SCALE: NTS CHLBY: SRB

LOCATION MAP – EXETER

SUSQUEHANNA RIVER FLOOD CONTROL PROJECTS
WYOMING VALLEY, PENNSYLVANIA
OUTFALL SEWER/GATE INSPECTIONS
EXETER

PROJECT NO. 2001-1067-00

DRAWING NO. FIGURE 2E

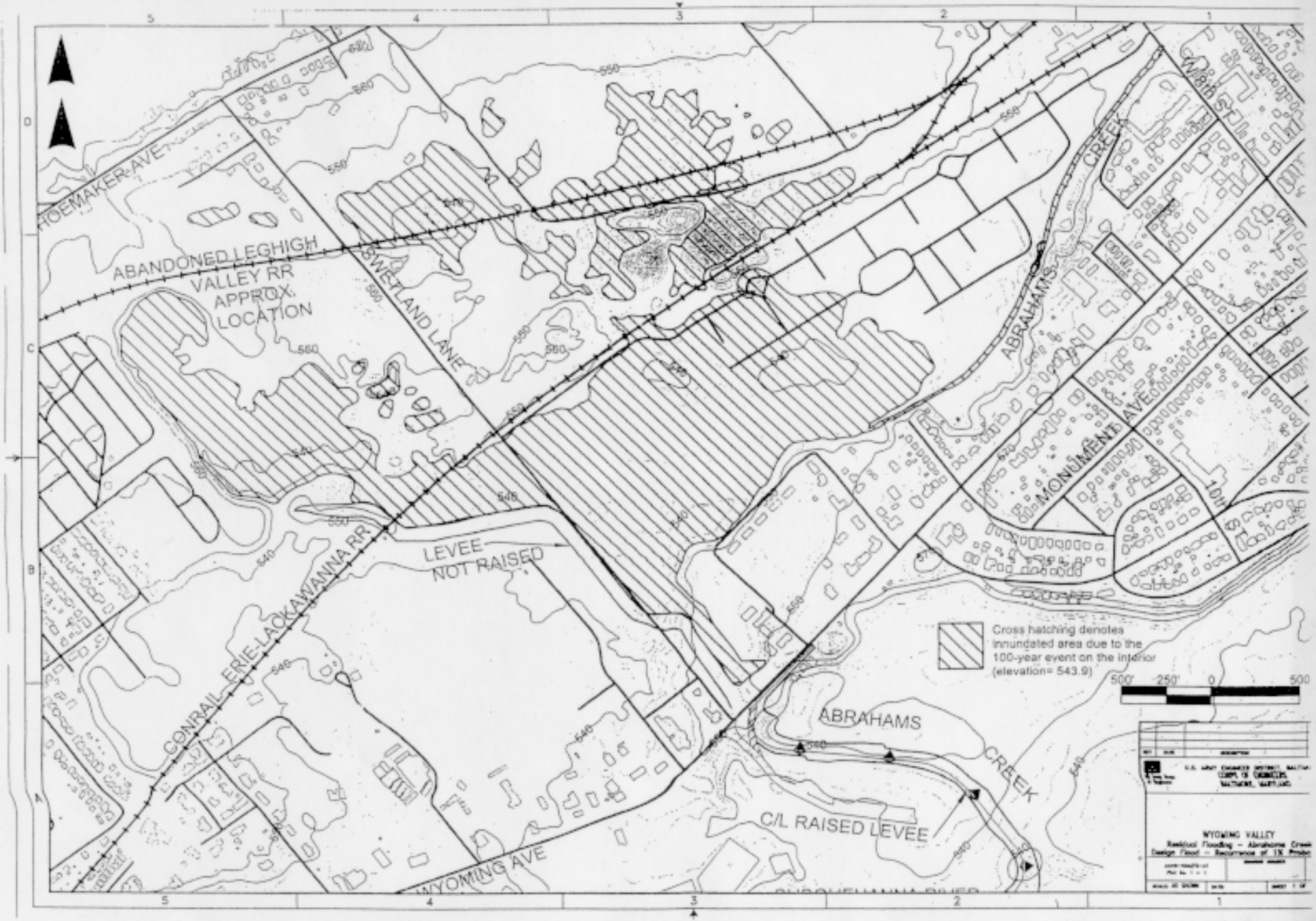
HOEMAKER AVE
ABANDONED LEGHIGH VALLEY RR APPROX. LOCATION
SWETLAND LANE
ABRAHAMS CREEK
MONUMENT AVE
16th ST
LEVEE NOT RAISED
CONRAIL-ERIE-LACKAWANNA RR
Cross hatching denotes inundated area due to the 100-year event on the interior (elevation= 543.9)
500' 250' 0 500
ABRAHAMS CREEK
C/L RAISED LEVEE
WYOMING AVE
SUSQUEHANNA RIVER
WYOMING VALLEY
Residual Flooding – Abrahams Creek
Design Flood = Recurrence of 1% Frequency

FIGURE 3

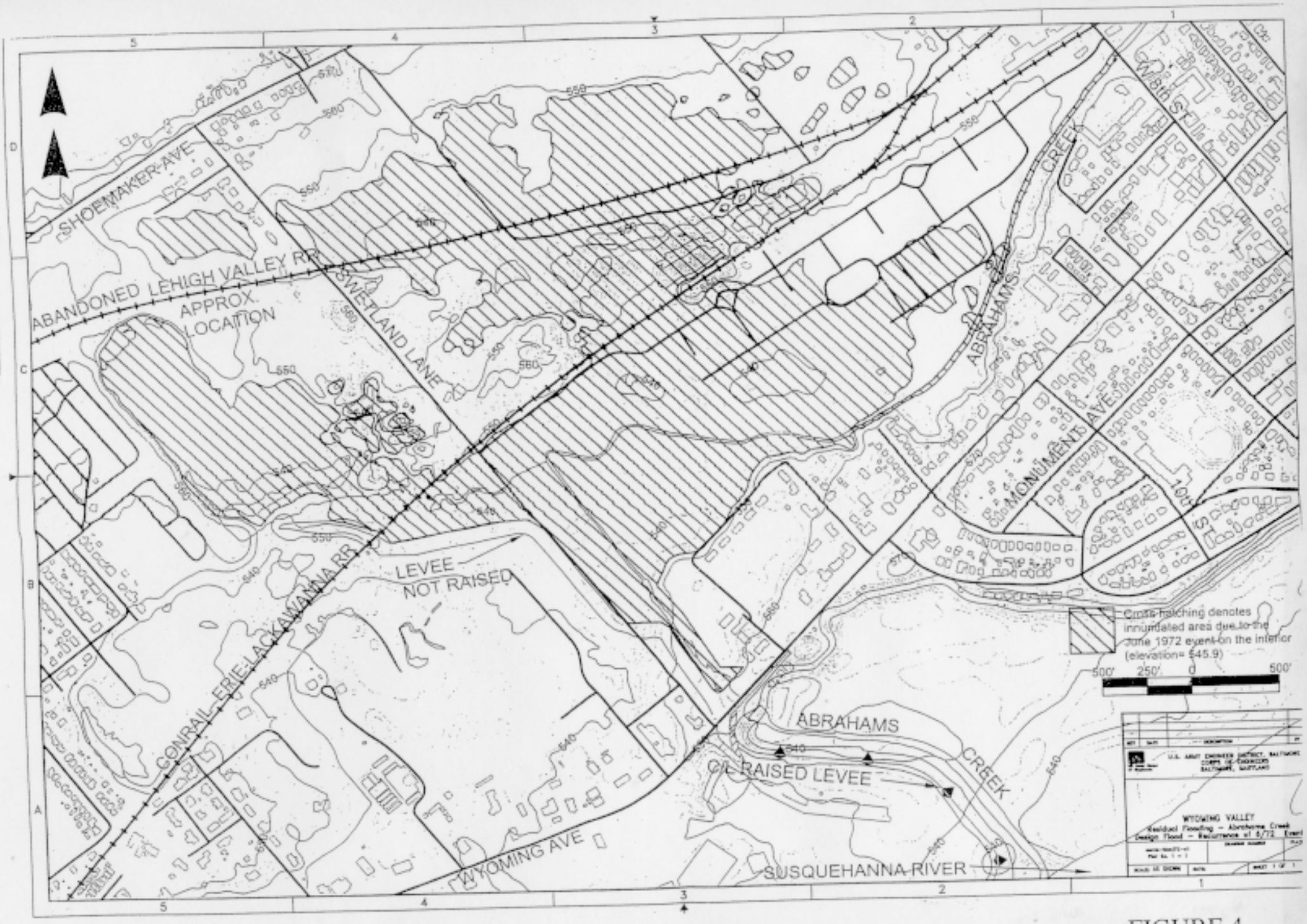
SHOEMAKER AVE
ABANDONED LEHIGH VALLEY RR
APPROX. LOCATION
SWETLAND LANE
ABRAHAMS CREEK
MONUMENT AVE
WASH ST
10TH ST
LEVEE NOT RAISED
CONRAIL-ERIE LACKAWANNA RR
WYOMING AVE
ABRAHAMS CREEK
CL RAISED LEVEE
SUSQUEHANNA RIVER
Cross hatching denotes inundated area due to the June 1972 event on the interior (elevation= 545.9)
500' 250' 0 500'
U.S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
BALTIMORE, MARYLAND
WYOMING VALLEY
Residual Flooding – Abrahams Creek
Design Flood – Backwater of 6/72 Event

FIGURE 4

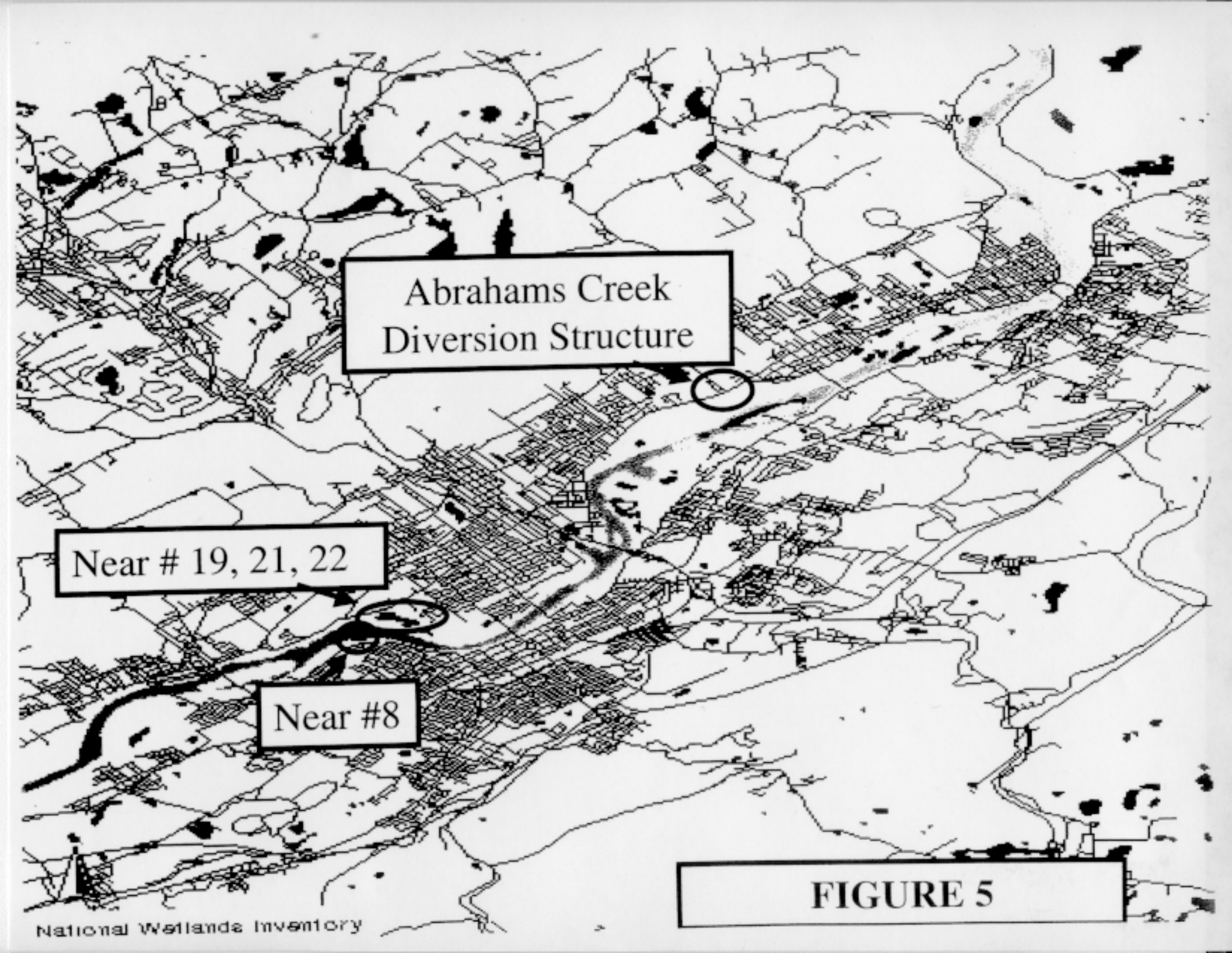
Abrahams Creek
Diversion Structure
Near # 19, 21, 22
Near #8
National Wetlands Inventory

FIGURE 5

ATTACHMENT B

Environmental Compliance Table
And
Clean Water Act Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material
40 CFR Part 230

Compliance of the Actions with Environmental Protection Statutes and Other Environmental Requirements

Federal Statutes	Level of Compliance[1]
Anadromous Fish Conservation Act	N/A
Archeological and Historic Preservation Act	Full
Clean Air Act	Full
Clean Water Act	Full
Coastal Barrier Resources Act	N/A
Coastal Zone Management Act	N/A
Comprehensive Environmental Response, Compensation and Liability Act	Full
Endangered Species Act	Full
Estuary Protection Act	N/A
Federal Water Project Recreation Act	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act	Full
Magnuson-Stevens Fishery Conservation and Management Act	Full
Marine Mammal Protection Act	N/A
National Historic Preservation Act	Full
National Environmental Policy Act	Full
Resource Conservation and Recovery Act	Full
Rivers and Harbors Act	Full
Watershed Protection and Flood Prevention Act	Full
Wild and Scenic Rivers Act	Full
Executive Orders, Memoranda, etc.	
Migratory Bird (E.O. 13186)	Full
Protection and Enhancement of Environmental Quality (E.O. 11514)	Full
Protection and Enhancement of Cultural Environment (E.O. 11593)	Full
Flood plain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	Full
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug. 80)	Full
Environmental Justice in Minority and Low-Income Populations (E.O. 12898)	Full
Protection of Children from Health Risks & Safety Risks (E. O. 13045)	Full

[1] Level of Compliance:

Full Compliance (Full): Having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.

Partial Compliance (Partial): Not having met some of the requirements that normally are met in the current stage of planning.

Non-Compliance (NC): Violation of a requirement of the statute, E.O., or other environmental requirement.

Not Applicable (N/A): No requirements for the statute, E.O., or other environmental requirement for the current stage of planning.

CLEANWATER ACT
SECTION 404(b)(1) EVALUATION

Wyoming Valley Levee Raising Project, Pennsylvania
ABRAHAMS CREEK DIVERSION STRUCTURE
AND
LEVEE PENETRATIONS

I. Introduction

Dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact, either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.

The *Guidelines for Specification of Disposal Sites for Dredged or Fill Material* were developed by the Administrator for the United States Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the Clean Water Act (33 U.S.C. 1344). The Guidelines are applicable to the specification of disposal sites for discharges of dredged or fill material into waters of the United States (U.S.).

In evaluating whether a particular discharge site may be specified, the following steps should generally be followed: (a) review the restriction on discharge, the measures to minimize adverse impacts, and the required factual determinations; (b) examine practicable alternatives to the proposed discharge; (c) delineate the candidate disposal site; (d) evaluate the various physical and chemical components; (e) identify and evaluate any special or critical characteristics of the candidate disposal site and surrounding areas; (f) review factual determinations to determine whether the information is sufficient to provide the required documentation or to perform pre-testing evaluation; (g) evaluate the material to be discharged to determine the possibility of chemical contamination or physical incompatibility; (h) conduct the appropriate tests if there is a reasonable probability of chemical contamination; (i) identify appropriate and practicable changes in the project plan to minimize the impact; and (j) make and document factual determinations and findings of compliance.

II. Project Description

A. Location

Wyoming Valley is in northeastern Pennsylvania and extends from Duryea on the Lackawanna River southwestward to Nanticoke on the Susquehanna River in Luzerne County. Federal flood control projects are at Plymouth, Kingston/Edwardsville, Swoyersville/Forty-Fort, and Wilkes-Barre/Hanover Township. Together, these four projects function as one large flood control system.

B. General Description

1. *Abrahams Creek* - Abrahams Creek modifications are restricted to 14 - 66-inch corrugated metal pipes with manual sluice gates, a structural steel hoisting frame, access bridge, and mechanical hoisting equipment. This approximately 112-foot long structure was constructed in the 1940's as part of the original Corps flood protection project. The drainage structure carries the flow from Abrahams Creek under Wyoming Avenue (U.S. Route 11) to the Susquehanna River.

   Work would include plugging two of the pipes, slip lining the remaining 12 pipes, upgrading/installing an apron, adjusting the sluice gate wedges, replacing seals, cleaning and painting the gates, and installing staff gages. Stream flow through half of pipes would have to be diverted while the other half are repaired and two pipes abandoned. Sandbag cofferdams would be used to prevent discharge to the diversion channel and de-water the work site. Temporary stream crossings are required on the upstream and downstream side of the diversion channel to permit access to the culverts. Work would also entail excavating, grading, and backfilling streambed material to allow for the construction of the apron and to perform the necessary repairs. All work within stream channels would be conducted within a 75-foot wide area adjacent to the structure.

   2. Penetrations - The original outfall sewers were constructed in the 1800's to convey storm and sanitary wastewater from the city and municipalities to the Susquehanna River. In the early 1970's, the Wyoming Valley Sanitary Authority installed intercepting sewers to convey the valley's wastewater to its regional treatment plant located in Hanover Township. In several locations the sewers cross under the levee. As they exist today, the outfall pipes vary greatly in size, age, composition, and condition. Work would include de-watering the work sites (*i.e,* cofferdams), grouting tunnels/pipes, slip-lining pipes, cleaning/removing grout, repairing gates, and repairing collapsed pipes. Additional information on the specific work to be performed can be found in Table 3 of the EA.

C. Purpose

The purpose of the proposed work is to reduce the risk of flooding and local levee failure. If the penetrations and Abrahams Creek diversion structure are not updated and improved, the original structures present the risk of flooding to the Wyoming Valley even with the raised levee and floodwall system in place.

D. General Description of Discharge Material

1. *Characteristics of Fill Material* - Fill materials would consist of native material and suitable backfill from a commercial source. Fill materials would be free of contaminants.

2. *Source of Fill materials* – Native material excavated and commercial backfill materials would be used. Sandbags would contain sand and/or gravels.

E. Description of the Proposed Discharge Site

Materials would be discharged to backfill excavations around pipes and the diversion structure. Temporary fill, primarily in sandbags, would be discharged to create cofferdams to de-water construction sites.

Access is needed to the riverside of the Loveland Avenue pump station to repair the pump stations piping through the levee (site #21, see figure 2C). Vehicles would travel along the toe of the levee from U.S. Route 11 (Wyoming Avenue). At the outfall of the Beet Field/Loveland relief culvert there is a low area with wetlands. When the relief culvert was constructed, crushed stone was discharged at the outfall area of the culvert. The crushed stone has become silted in over the years and now supports vegetation. The site is generally wet, depending on the amount of precipitation. Depending on how wet the wetland area is at the time of construction, vehicles would either traverse through the area or if necessary, fill materials would be discharged to allow vehicles to drive past the culvert. Wetland impacts are estimated to be less then 0.05 acres.

F. Description of Fill Materials and Placement Method

Fill materials would be placed by hand or mechanical equipment such as backhoes or front-end loaders. At excavation sites, original contours would be re-established to the extent practicable. Areas would be stabilized to prevent erosion and best management practices would be implemented to minimize potential adverse impacts.

III. Alternatives Considered

Only the pipes and diversion structures that are critical to maintaining adequate flood protection are being repaired/maintained (26 of the 54 evaluated). There are no practicable alternatives for work at the penetrations and within the diversion structures. Cofferdams must be used to de-water the sites. Slip lining of pipes would be used where practicable, as opposed to digging up and replacing the pipes. A more detailed alternatives analysis can be found in section 2 of the EA.

For the penetrations near the Beet Field/Loveland relief culvert, vehicles would traverse through the wetland area if it were dry enough at the time of construction. If the site were too wet, minimal amounts of fill would be discharged to allow vehicles to access the Loveland Avenue pump station piping. Vehicles would travel as close to the levee and relief structure as possible. Due to the levee and the location of the wetlands, it is not practicable for vehicles to drive around the wetlands. Access to the pump station from a different direction is not possible due to the extent of wetlands in the area and the railroad tracks (see figure 2C of the EA).

IV. Factual Determinations

A. Physical and Substrate Determinations

Soils vary from well-drained with sands and coarse gravel to poorly drained soils. Some soils have a high organic content, while others are primarily mineral soils. Many of the soils around the pipes have non-native bedding material.

B. Water Circulation, Fluctuation, and Salinity Determinations

1. *Water* - Minimal adverse affects are expected during periods of construction. Impacts would be related to more turbidity and suspended sediments from disturbing soils/sediments. Affects would be temporary and localized. Best management practices would be implemented to ensure that the work complies with state water quality standards.

2. *Current Patterns and Circulation* - Minimal to negligible adverse affects are expected due to the nature of the work purposed. Cofferdams would be temporary in nature and divert the water to allow for in-water work. Water velocities would increase with use of the cofferdams. Construction sites would be monitored to ensure that the diversion structures did not cause adverse affects downstream. Fill for the access road at the Beet Field/Loveland Avenue relief culvert would be designed so as not to impede drainage.

3. *Normal Water Level Fluctuations* - Normal water level fluctuations are not expected to be affected by the proposed work.

4. *Salinity Gradients* – Not applicable. Water at the site is fresh.

5. *Actions That Will Be Taken to Minimize Impacts* - Best management practices would be implemented such as the use of siltation fences and stabilizing exposed soils with hay or seeding.

C. Suspended Particulate/Turbidity Determinations

1. Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Placement Site - Minimal changes are expected from construction activities. Increases would be temporary.

2. Effects (degree and duration) on Chemical and Physical Properties of the Water Column -

(a) Light Penetration – Negligible to minor affects is anticipated. Impacts would be temporary and localized.
(b) Dissolved Oxygen - Negligible to minor affects are anticipated. Impacts would be temporary.
(c) Toxic Metals and Organics – Fill materials would be free of toxic metals. Native materials would be used to backfill excavations where appropriate.
(d) Pathogens – No affects anticipated.
(e) Aesthetics – Adverse impacts would be relatively minor, localized, and temporary.
(f) Temperature – No adverse affects are anticipated.

D. Contaminant Determinations

Contamination is not known or expected to occur at any of the proposed work sites. However, if contamination were discovered, appropriate coordination would occur with local, state and federal agencies.

E. Aquatic Ecosystem and Organism Determinations

1. Effects on planktonic, benthic and nektonic species - Construction activities can be expected to have negligible to minor overall effects. Most impacts would be temporary and localized in nature. No changes in community structure in the Wyoming Valley area is expected.

2. *Effects on Special Aquatic Sites* – Less than 0.05 acres of wetlands would be filled by the discharge of fill materials to allow for vehicles to traverse pass the relief culvert. No appreciable adverse affects are anticipated. Fill would be discharged at the mouth of the outfall structure in a previously disturbed area.

3. *Threatened and Endangered Species* - The US Fish and Wildlife Service concurred that construction of the proposed actions are not likely to adversely affect any Federally-listed or proposed species or their habitat.

4. Other Wildlife – All of the species in the study area are numerous or common in Pennsylvania and are somewhat tolerant of human effects on the landscape. No appreciable adverse effects on fish and wildlife are expected due to the nature of the project and its location.

F. Proposed Disposal Site Determinations

1. Mixing Zone Determination – No appreciable adverse affects are anticipated. Work sites would be de-watered to the extent practicable. Some minor turbidity would be created by the proposed work.

2. Determination of Compliance with Applicable Water Quality Standards – The proposed work would comply with state water quality standards. Best management practices would be incorporated into the work to minimize the potential for erosion and the subsequent siltation of downstream waters. Native material and clean fill (i.e., free from contaminants) would be used.

3. Potential Effects on Human Use Characteristic -

(a) Municipal and Private Water Supply – No affect is anticipted.
(b) Recreational and Commercial Fisheries – No affect is anticipated due to the nature of the work proposed.
(c) Water Related Recreation – Access to the specific works sites by the general public would be prohibited during periods of construction. Appropriate signage and necessary barriers would be installed to ensure public safety. Impacts would be temporary and minor.
(d) Aesthetics – No appreciable adverse affects are anticipated.
(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – None would be affected by the proposed work.

G. Determination of Cumulative Effects on the Aquatic Ecosystem – No appreciable adverse cumulative effects on the aquatic ecosystem is anticipated from the work proposed. Most of the

impacts to waters of the U.S. would be temporary in nature. The filling of less than 0.05 acres of wetlands for access to the Loveland Avenue pump station piping would contribute to the overall wetland impacts from the flood control project. The work proposed is related more to operation, maintenance, and upgrading of the flood control system.

H. Determinations of Secondary Effects on the Aquatic Ecosystem – No appreciable adverse secondary affects are anticipated from the proposed work.

V. Finding of Compliance

A. Adaptation of the Section 404(b)(1) Guidelines to This Evaluation - No adaptations of the Guidelines were made relative to this Evaluation.

B. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem – No practicable alternatives that would accomplish the project purpose and need that would not result in a discharge in the waters of the U.S. have been identified. Impacts have been minimized to the extent practicable.

C. Compliance With Applicable State Water Quality Standards – Commonwealth water quality standards would be adhered to. A Section 401 water quality certification or waiver is required from the Commonwealth of Pennsylvania.

D. Compliance With Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act - The proposed fill material is not anticipated to violate the Toxic Effluent Standard of Section 307 of the Clean Water Act.

E. Compliance With Endangered Species Act of 1973 – The project is in full compliance with the Endangered Species Act. No affect on threatened or endangered species is anticipated.

F. Compliance With Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972 - No Marine Sanctuaries, as designated in the Marine Protection, Research, and Sanctuaries Act of 1972, are located within the study area.

G. Evaluation of Extent of Degradation of Waters of the United States – No appreciable adverse impacts are anticipated from the proposed action. Impacts are expected to be negligible and localized.

H. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem – Appropriate and practicable steps to minimize potential adverse impacts would be incorporated into the project. These include implementing best management practices such as the use of silt fences, and stabilizing exposed soils by seeding and the use of hay.

I. Findings of Compliance with the Restrictions on Discharge – The proposed project will not contribute to the significant degradation of the waters of the United States, including adverse

effects on human health or welfare, life stages of aquatic life and other wildlife dependent on aquatic ecosystems, aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values. In addition on the basis of these Guidelines (subparts C through G), the proposed disposal site(s) for the discharge of dredged or fill material is specified as complying with the requirements of these Guidelines with the inclusion of appropriate and practicable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystem.

ATTACHMENT C

Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Eastern Pennsylvania Field Office
P.O. Box H
Tobyhanna, PA 18466-0080

May 20, 2002

Amy Guise, Biologist
Planning Division, Baltimore District
U.S. Army Corps of Engineers
P.O. Box 1715
10 South Howard Street
Baltimore, Maryland 21203-1715

Dear Ms. Guise:

The Department of the Interior has reviewed the project plan known as the Wyoming Valley Levee Raising Project. This report is prepared and submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Fish and Wildlife Surveys and Investigations

No significant adverse effects on fish and wildlife are expected to result from the proposed activity. Therefore, the Service has no objection, from the standpoint of fish and wildlife, to the continuance of this project.

We appreciate the opportunity to comment on this project. If you have any questions regarding these comments, please contact Jared Brandwein of this office at (570) 894-1275.

Sincerely,

Jared Brandwein
Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

March 11, 2002

Amy Guise
U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Ms. Guise:

This letter documents ongoing informal consultation, pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), between the Army Corps of Engineers and the Fish and Wildlife Service, regarding potential effects to federally listed species due to the Wyoming Valley Levee Raising project, located within and in the City of Wilkes-Barre, Luzerne County, Pennsylvania. Our July 16, 1998, letter discussed potential effects to the federally listed, endangered peregrine falcon (*Falco peregrinus*) and Indiana Bat (*Myotis sodalis*).

Since the peregrine falcon is no longer federally listed, all conditions relevant to this species in our 1998 letter (copy attached) are no longer mandatory. However, we recommend that these initial conditions nonetheless be implemented. The conditions specified for the Indiana bat remain in effect.

If this project is implemented as proposed, and consistent with the conditions stated in our July 16, 1998, letter, we concur that construction of the proposed project is not likely to adversely affect any federally listed or proposed species or their habitat. This response relates only to endangered or threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities.

If we can be of further assistance, please contact Bonnie Dershem or Carole Copeyon of my staff at 814-234-4090.

Sincerely,

David Densmore
Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

July 16, 1998

James F. Johnson, Ph.D.
Chief, Planning Division
U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Dr. Johnson:

This letter documents ongoing informal consultation, pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), between the Army Corps of Engineers and the Fish and Wildlife Service, regarding potential effects to federally listed species due to the ongoing Wyoming Valley Levee Raising project, located within and in the vicinity of the City of Wilkes-Barre, in Luzerne County, Pennsylvania. This consultation pertains to potential effects of the project on the federally listed endangered peregrine falcon (*Falco peregrinus*) and Indiana bat (*Myotis sodalis*).

Peregrine Falcon

This project involves increasing the height of a levee in and in the vicinity of the City of Wilkes-Barre for flood control purposes. The subject levee will tie into both the upstream and downstream sides of the Cross Valley Expressway Bridge.

A male and immature female peregrine falcon have been observed in the vicinity of the Cross Valley Expressway Bridge in Wilkes-Barre since April of 1998. This pair has established the bridge as a nesting area, as evidenced by their mating and nest building behavior, and their fidelity to and defense of the site. During a May 21, 1998, site visit to the project area, Service biologist Carole Copeyon observed both falcons perched under the subject bridge. During a June 22, 1998, site visit (related to a proposed Pennsylvania Department of Transportation project) Service biologist Michael McCarthy observed from the bridge's catwalk a 4 to 5-inch depression (the nest site) scraped out of the gravel that had accumulated on the top of one of the bridge piers. Due to the female's age (estimated at 2 years), however, no eggs were observed.

During the Service's May 21 site visit, we recommended that construction activities be restricted in the vicinity of the bridge to avoid harming or harassing the falcons, and that a qualified biologist conduct an observational study of the falcons to determine whether or not construction activities were altering their behavior. At that time, trucks and other heavy equipment were

moving and stockpiling earth and other materials on the upstream side of the bridge, while smaller trucks and equipment were clearing riparian vegetation on the downstream side of the bridge.

The observations occurred on eight days in June, and included various times of day during construction and non-construction periods. We have completed our review of the observational data and summary report. Unfortunately, the data were not collected in such a manner that quantitative comparisons could be made between falcon behavior categories (e.g., feeding, perching, flying, calling), time spent on, versus away from, the bridge, and construction activities. Based on our review of the reports, however, it does not appear that current construction activities are having an adverse effect on the falcons. In our judgment, construction activities do not seem to be impairing essential behavioral patterns, including breeding, feeding or sheltering at this time.

Accordingly, the Service does not object to the Corps proceeding to work within those areas previously designated as "no work" zones (i.e., within a 0.25 mile radius of the Cross Valley Expressway Bridge) from July 15, 1998 to February 28, 1999, provided the Corps ensures that its activities do not adversely affect the falcons. Although no adverse effects have been observed to date, the falcons' reaction to work within close proximity of the bridge (e.g., within 200 yards) should be monitored if the nature of the work or disturbance levels associated with the equipment (e.g., noise levels, height of equipment, number and/or size of vehicles) is anticipated to increase with respect to current conditions. If at any time adverse effects to the falcons are observed, construction activities must immediately cease and consultation with the Service must be reinitiated.

Because it is likely that this pair of falcons will attempt to breed next year at the same location, the Corps should attempt to complete all work within a 0.25 mile radius of the Cross Valley Expressway Bridge prior to March 1, 1999. Because March 1 to July 15 is the mating and nesting season for peregrine falcons, it is during this time period that further construction activities within 0.25 mile of the nest site may need to be restricted, depending on the nature of the activity, the nest location, proximity of activities to the nest site, whether activities are vegetatively screened from the falcons' view, and the falcons' tolerance levels.

This project will occur over several years, and within close proximity to other bridges over the Susquehanna River that may serve as suitable peregrine falcon nest sites. Therefore, if project activities will be occurring within 0.25 mile of these bridges, a peregrine falcon survey should be conducted in early spring (March) of each year prior to initiating project activities within the vicinity of these potential nest sites, especially if the resident pair of falcons abandons the Cross Valley Expressway Bridge.

Indiana Bat

Two small Indiana bat hibernacula are known to occur in Luzerne County. Indiana bats select medium to large diameter (>9 inches dbh), dead, dying, or living trees with exfoliating bark for

roost trees, particularly maternity roost trees. Much of the project is located within or is surrounded by urban and suburban areas, and probably lacks sufficient foraging habitat to sustain Indiana bats. Some project areas, however, such as the segment going through the Kirby Park Natural Area, may have an adequate supply of foraging habitat and roost trees to support Indiana bats. Within areas such as this, we typically recommend that cutting of dead, dying, or living trees greater than 9 inches dbh with exfoliating bark be done from October 1 to March 31. Implementing this approach will also minimize adverse effects to breeding birds, as it avoids the nesting season for many bird species. Indiana bats usually require a home range size of at least 75 acres, with 25 to 80 percent forest canopy cover. In order to determine whether or not a seasonal restriction on tree cutting may be necessary, the Corps should determine whether or not forested habitats within the project area are sufficient in size and characteristics to support Indiana bats. Factors to be considered include total project size (e.g., length), existing forest cover within and adjacent to the project area, proposed acres of forest clearing, type of forest, and tree characteristics (e.g., dbh, species).

If you have any questions regarding this matter, please contact me at 814-234-4090.

Sincerely,

Carole K. Copeyon
Acting Supervisor

Phone Conversation Record, 22 January 2003

Re: Discussion with Steve McDouglas, Pennsylvania SHPO Compliance Reviewer, regarding Slip-Lining Undertaking at Wyoming Valley Levee Raising Project

1. The Baltimore District provided the PA SHPO with a letter describing the project dated 11 December 2002. The PA SHPO did not respond to the letter.

2. Discussion with the SHPO staff resulted in the concurrence that the sliplining of pipes under the existing Wyoming Valley levee does not constitute a adverse effect to any cultural resources in the project area. Therefore consultation under the National Historic Preservation Act has been concluded

USDA NRCS

Natural Resources Conservation Service

Plymouth Field Office
911 W. Main St.
Plymouth, PA 18651

December 10,2001

To: Amy Guise
USAED-Baltimore

From: Rich Maculaitis. District Conservationist
USDA-NRCS. Plymouth Field Office

RE: Prime and Unique soils determination for Wyoming Valley Levee Raising Project
River Commons Park Section also the Abrahams Creek.Toby Creek , and culverts/penetrations through the levee

Amy.

As we discussed on the phone.the area above is on soils maps #17 and #23. The soils are mapped as Pope fine sandy loam, a Prime farmland soil ; however. the site has been historically disturbed with previous levee construction and not considered protected under the farmland protection regulations as we see them.This determination is for the River Commons , and the above listed culvert and penetrations of the levee near Abrahams Creek and Toby Creek only. Other areas along the River may hold more significance as Agricultural soils needing protection.

Richard Maculaitis

ATTACHMENT D

Finding of No Significant Impact

FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, as amended, the U.S. Army Corps of Engineers, Baltimore District, has assessed the environmental effects of the Abrahams Creek diversion structure and levee penetrations as part of the Wyoming Valley Levee Raising Project, Pennsylvania. Various alternatives were evaluated to ensure the integrity of the flood protection project. The alternatives included no action, omitting pipes from the Abrahams Creek structure, repairing additional penetrations, and updating the penetrations with various techniques (slip lining, grouting, etc).

The Abrahams Creek diversion structure and a number of levee penetrations will be repaired and upgraded. Work at Abrahams Creek will include plugging 2 of the pipes, slip lining the remaining 12 pipes, upgrading/installing an apron, adjusting the sluice gate wedges, replacing seals, cleaning and painting the gates, and installing staff gages. Work will also entail excavating, grading, and backfilling streambed material at Abrahams Creek to allow for the construction of the apron and to perform the necessary repairs. All work within the stream channels at Abrahams Creek will be conducted within a 75-foot wide area adjacent to the structure. If necessary, work sites will be de-watered (*i.e.*, use of cofferdams).

Work will also be conducted at approximately 26 levee penetrations consisting of activities similar to the Abrahams Creek alternatives. The penetrations work includes grouting tunnels/pipes, slip lining pipes, cleaning/removing grout, repairing gates, and repairing collapsed pipes. All penetrations, except water tunnels, would require temporary sandbag diversions during construction.Flow through penetration #16A would be permanently rerouted as a result of construction. For the penetrations near the Loveland Avenue pump station, vehicles must traverse through a wetland area on the riverside of the Beet Field/Loveland Avenue relief culvert to access the Loveland Avenue penetrations. Depending on how wet the wetland area is at the time of construction, vehicles will either traverse through the wetlands in their present condition or, if necessary, fill materials would be discharged to allow vehicles to drive past the culvert. Wetland impacts will be less then 0.05 acres.

Minor impacts to waters of the United States are unavoidable due to physical, safety, and engineering constraints associated with both the Abrahams Creek work and levee penetrations. No practicable alternatives were identified that will accomplish the project purpose and need and not result in a discharge in the waters of the U.S. For all work, impacts have been minimized to the extent practicable. Appropriate and practicable steps to minimize potential adverse impacts will be incorporated into the project. These include implementing best management practices such as the use of silt fences and stabilizing exposed soils. The proposed work will not have an adverse affect on any threatened or endangered species or their critical habitat. Work will also not have an affect on any property eligible or on the National Register of Historic Places. A state water quality certification will be obtained prior to the initiation of construction.

The accompanying environmental assessment supports the conclusion that the project does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not necessary to perform the work at the Abrahams diversion structure or the penetrations along the Wyoming Valley levee system.

ROBERT J. DAVIS
Colonel, Corps of Engineers
District Engineer